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Some Observations on the Socialization of Medicine

I HESITATE to assume you agree with me that socialization of medicine is inevitable but should it come it is the right of our profession to assume a major role in the medical planning of the immense problem. There are over fifteen million people sixty-five years of age or older in the United States and they, in addition to their children who do not wish or are not able to accept responsibility for their care, represent a block of votes too powerful for the political aspirants to ignore. Therefore it would seem that socialization of medicine is not only inevitable but that the politicians will be very reluctant to yield one shred of power and patronage by asking the medical profession to make suggestions and implement the program.

After having viewed socialized medicine around the world I believe that there remain two different things the medical profession can do. One is to help with the machinery which has been operating for many years to combat the political fever which is rampant and which urges us to sell our freedom for a given number of votes for some politician seeking office or wanting to stay in office. Our training and our way of life have kept us out of political and social circles where such undesirable laws are conceived and cleverly placed before the voting public but in maintaining our Ivory Tower aloofness we have abdicated a grave personal and group responsibility to ourselves and to our patients. We should re-emphasize the very realistic program which has been simmering for the past fifteen years to ward off the vigorous efforts of those in our profession in favor of socialization.

Of course the medical profession has been guilty of errors and its freedom as always in a "free" society has permitted certain members of the profession to sanction if not participate in various actions which appear to the people as less than dedicated service. The lay public as well as the profession should seek to correct these errors in judgment as to the proper relationship between them. When doctors are called at night and refer their patients to an emergency room

at a hospital, they are simply adding votes by the hundreds to the side of the politicians offering socialized medicine legislation. If the people who flock to the emergency rooms of our hospitals, many of them being referred there by members of our profession, will accept the advice of a junior medical student, then they will certainly accept socialized medicine and cast their ballots at the next election for the men who promise such legislation.

As the second course of the only remaining action left to our profession in this unequal political duel I make the following suggestions:

Don't send every patient with a backache for \$60.00 worth of x-rays from which no advice is obtainable only the probable information that the pictures are negative.

Don't put off a family in which a sudden tragic situation has occurred by telling them that your appointments for the day are taken.

Don't refuse to see patients with alarming symptoms or possible injury because to do so might necessitate fifteen minutes delay in your next appointment.

Don't refer every patient with a tension headache just to get rid of them.

Don't refuse to look into a patient's throat just because it is "out of your line."

Don't tell people that you don't make house calls and hang up the phone but insist in helping them secure a doctor who will manage their problem.

Don't harm your patient financially after you have cured him physically by naming a fee beyond his capacity to pay. (Rumor has it that the younger men in the profession err in this connection more often than the older men.)

We doctors should become aware of what is going on at the desks of our receptionists and correct some very bad public relations including care about referring patients to one specialist after another. I know that many patients demand "the works" in examination but their doctor is their adviser and the patient should not be the one who

dictates the terms when expensive, useless procedures are involved. We should help people secure a doctor when we cannot see them ourselves but a few extra hours spent by the doctor at work instead of on the golf course might improve the situation immensely.

Let's have a rebirth of the loyalty of the doctor and the unswerving confidence of the patient which can easily become a reality.

Let's quit being a forty-hour-week worker and take care of these people who so urgently want and need our help.

The loyalty of one's patients is something which cannot be bought with dollars and cents; it is something given to you for the art of healing, for the great humanitarian effort you make and for your willingness to be of service in times of critical decision and appropriate action.

Let's join the professional army now and by word and deed ward off this imminent threat on the horizon, this invasion of our profession by the government.

I greatly sympathize with young people just being graduated in medicine because they will be so far back in line that opportunity will never reach them, if they have any desire to be more than a "penicillin injector" in their government job as a general practitioner. We shall see of course a reduction of desirable individuals applying for enrollment in medical schools simply because a desirable applicant does not wish to be a salaried pawn of politicians.

Don't belittle yourself by comparing the medical profession to a plumber, filling station attendant and others offering service because they are not dealing with human life. Don't rely on warning your patients that socialized medicine will cause people to wait even longer to see a doctor—which is undoubtedly a true prediction—because they will either not believe you or feel that if they get medical service free the time they wait will not matter. They are willing to vote for the wily politician as he lures them to his views at political rallies or by television. They will listen to his promises and vote as he directs because he promises that if he is

elected he will see that the government furnishes them better medical care, better doctors, better nurses and bigger, more modern hospitals, all free for the asking. They will not question where these "better" medical services will obtain "better" members of the profession under a system which robs them of all incentive and blunts their satisfaction in healing the sick.

I am deeply concerned about the threat of socialization of medicine and I am also deeply concerned that all professions and business in general will probably be owned or controlled by our government eventually. In this country forty million Americans are now drawing checks from the Federal Government which, including social security payments, add up to a sum of about forty billion dollars a year. Along with other members of their families, the beneficiaries could easily out-number the non-subsidized segment of our population. This fact has an overwhelming political implication and I must believe that the outlook is bleak indeed for a reversal of this trend toward the complete welfare state. If and when "welfarism" arrives, we shall lose our spirit of independence and individuality. We shall lose the competitive spirit which has strongly motivated every great American and which is so essential to the growth of business and industry and to the professions. This enslavement will extract from everyone the desire to drive ahead into the vastness of the future, this desire which has inspired Americans to make the United States not only great but the greatest nation in the world.

I ask you to direct your social and political efforts toward maintaining that which is so dear to us, The American Way of Life. This country was founded on the desire for freedom, for the right to strive for individual success. America was founded by a small group of fearless men and women who refused to live under British tyranny. Now our politicians want to sell our public on the unrealistic propaganda taken from the mouths of people whose heritage dates back to the very men whose economic philosophy our ancestors found intolerable and vigorously, successfully repudiated.—*Joseph W. Kelso, M.D.* □

NOTE: The opinions expressed in the editorial pages of The Journal are those of the authors and do not necessarily represent the official attitude of the Oklahoma State Medical Association.



How will our nation fare in Federal Legislation during 1963? Will our 88th Congress give us a more conservative, a middle of the road or a continued socialistic trend?

The administration's loading of the House Rules Committee from 12 to 15 members indicates a liberal move.

Medical care for the aged under Social Security will be presented in this session but will not be pushed with the utmost vigor. If tacitly unsuccessful this year, it will be augmented for the hard fight in 1964, another election year.

President Kennedy is reputed to have become a much more astute and diplomatic executive during the past two years. Sources close to the President indicate that recommendations of some of his more radical advisors are being evaluated on a more conservative basis.

The proposed individual and corporate income tax reduction, without budgetary reductions, is a dangerous move from the standpoint of deficit spending. However, it has popular appeal, even though socialistic according to present figures. The proposed budget this year is 99.8 billion dollars, the greatest in history during war or peace. The anticipated federal income is 88.6 billions. Thus an 11.2 billion dollars deficit without tax decreases, or approximately a 17.2 billion dollar deficit, should the 6 billions decrease be passed this Congress. This is a great price to our heritage for a few months of artificial economic prosperity.

Our position is clear cut. We must keep ever mindful that insidious forces are regrouping in an effort to destroy our democratic way of life. Let us maintain acute civic, county, state and federal vigilance, to the end that those who govern may be made to keep always foremost that their right to legislate is an authority bestowed upon them by a trusting people, and should they betray that faith, their powers may be removed.

J. Hoyle Carlock, M.D.

The Acute Abdomen Complicating Pregnancy*

J. RAYMOND HINSHAW, M.D.
Doctor of Philosophy, Oxford

THE PHYSICIAN called upon to diagnose or treat a suspected acute abdominal emergency in a pregnant patient faces several problems. First, the decision he reaches affects two patients, not just one. Second, the symptoms commonly associated with an acute abdomen—abdominal pain, nausea, vomiting, constipation—are commonplace even in apparently uncomplicated pregnancies. Third, as pregnancy advances, both the symptoms and the physical signs produced by an acute abdomen change from those ordinarily associated with that diagnosis. Fourth, in late pregnancy the enlarged uterus makes it quite difficult to interpret abdominal signs accurately.

This paper deals with the more common extra-genital abdominal emergencies which may complicate pregnancy. It describes ways in which diagnostic accuracy may be im-

proved, and explains the correct course of action when diagnosis remains uncertain.

I. ACUTE APPENDICITIS

A. *Incidence*

Three reasons have been given why an increased incidence of acute appendicitis among pregnant women might be expected: 1) because of the altered blood supply to organs in the pelvis, 2) because of an altered systemic defense mechanism against infections, and 3) because of the change in position and axial rotation of the appendix as pregnancy progresses. Despite these perfectly good reasons, acute appendicitis occurs in pregnant and nonpregnant women of comparable ages with the same frequency. It occurs about once in every 1,000 to 2,000 pregnancies. Another way of thinking of its incidence is that it occurs about one-sixth as often as ruptured ectopic pregnancy.

B. *The problems with diagnosis*

During the first four or five months of pregnancy the symptoms and signs of acute appendicitis are the same as those in the nonpregnant woman. The chief danger of misdiagnosis or delayed diagnosis at this time is that the patient no less than her physician commonly ignores symptoms of nau-

*From the Department of Surgery, University of Rochester School of Medicine and Dentistry. Presented at the Oklahoma City Clinical Society, October 29-31, 1962.

sea, vomiting and abdominal pain; they are so common during pregnancy. The only safe attitude for both patient and physician is that any symptoms which persist for several hours deserve medical attention.

As pregnancy progresses, diagnosis becomes more difficult. The patient's symptoms may be entirely misleading. For example, the onset of appendicitis during the last trimester may be a sudden, sharp, right lower quadrant pain brought on by the patient's changing position in bed. In other patients the pain may be quite vague with poor localization. Sometimes vomiting is the most prominent symptom.

Physical signs, too, can be quite misleading in late pregnancy and they are not necessarily typical even in early pregnancy. The only sign which is almost consistently present is localized tenderness in the right lower quadrant. Only about half of the patients have pain localized over McBurney's point. (How the position of the appendix changes as pregnancy advances is described later.) Less than 20 per cent of the patients have rectus or abdominal wall spasm. Rebound tenderness, contralateral tenderness (Rovsing's sign), and a positive psoas sign are each found in less than five per cent of the patients.

A little fever is usually but not always present. The white blood cell count is helpful, but one-third of the pregnant patients with acute appendicitis have a count under 14,000 (some under 10,000), and the differential shows less than 80 per cent polys in two-thirds of the patients.

Since diagnosis is so difficult and uncertain in the pregnant patient how should we proceed? Let us examine the statistics of maternal and fetal mortality with and without operation.

C. Maternal mortality

In 1908, Babler¹ wrote: "The mortality of appendicitis complicating pregnancy is the mortality of delay." The statement is still true. The further the pregnancy has progressed, the higher the rate of maternal morbidity and mortality. For all cases of acute appendicitis in pregnant women maternal mortality is about five per cent. In the first two trimesters it is less than two per cent, but in the last trimester it is around 16 per cent. In the last trimester the gravid

uterus prevents the omentum from sealing off a perforation which, therefore, almost invariably leads to generalized peritonitis.

Abortion or premature labor has little or no adverse effect on the prognosis of the mother.

D. Fetal mortality

What happens to the fetus if we operate early, or after perforation, or operate when the patient does not have acute appendicitis?

An operation for acute appendicitis within eight weeks of term is likely to result in labor sometime during the first three days following operation. An operation before the seventh month of pregnancy is unlikely to result in premature labor. Fetal mortality is related to the severity of appendicitis rather than to the duration of the pregnancy; it is as high as 30 per cent with a perforated appendix but is only about three per cent with simple acute appendicitis. When a mistaken diagnosis of acute appendicitis results in a negative exploration, fetal loss is rare.

E. How accurate can we be?

From the above it is evident that it is far safer for both mother and fetus for the surgeon to operate when the mother does not have appendicitis than it is for him to wait until the appendix has perforated. If he uses reasonable judgment and care, yet operates on all suspicious cases, he will find acute appendicitis about 70 per cent of the time and a normal appendix (usually with no evident cause for the patient's signs and symptoms) in the other 30 per cent.

F. A diagnostic sign

As pregnancy progresses the appendix rises higher and higher. By six months, the appendix in 66 per cent of the patients is above the iliac crest. By eight months it is above the crest in 93 per cent and the aver-

A graduate of the University of Oklahoma School of Medicine in 1946, J. Raymond Hinshaw, M.D., has been certified by the American Board of Surgery. He is Assistant Professor of Surgery at the University of Rochester School of Medicine.

Doctor Hinshaw is a member of the Central Surgical Association, the Society of University Surgeons, the American Society for Experimental Pathology and the American College of Surgeons.

age level is two finger breadths above the crest.

I think that a positive diagnostic sign for acute appendicitis in the pregnant woman is this: With the patient lying down if the point of maximum tenderness is more cephalad than one would expect in acute appendicitis it shifts to a more caudad position as the patient stands up. Any one surgeon sees so few pregnant patients with acute appendicitis that it is difficult to be certain about such diagnostic signs. It would be helpful to know how often others can demonstrate the sign.

Urinary infections which are common in pregnancy can mimic the signs and symptoms of appendicitis. Parker² has pointed out that in the absence of positive evidence of pyelitis it is safest to make a diagnosis of appendicitis. Positive evidence of pyelitis consists of a fairly high fever, a history of chills and frank pus in the urine.

G. *The operation*

Since we sometimes forget what a remarkably large organ the gravid uterus can be and how much displacement of other intra-abdominal organs it can produce, a few words about the operation in pregnant women may be of help.

A gridiron incision is best from the standpoint of strength of abdominal wall at the time of delivery. It may be placed higher and made longer than usual. Some surgeons prefer a horizontal incision over the area of maximum tenderness. If the patient is in the last trimester of pregnancy the operation may be facilitated by positioning her on her left side. The uterus should be disturbed as little as possible and a properly placed incision of sufficient size permits minimum displacement of the uterus. The pregnancy should be left undisturbed regardless of the severity of the appendiceal involvement or of the advanced state of pregnancy.

II. OTHER VARIETIES OF ACUTE ABDOMEN

The principles listed above apply to some other acute abdominal emergencies but not to all. The preferred procedures can be stated succinctly.

A. *Acute cholecystitis*

Symptoms of gall bladder disease and gall

bladder "attacks" are, of course, relatively common during pregnancy. However, severe attacks of acute cholecystitis are only about one and one-half times as common as acute appendicitis. In other words, acute cholecystitis occurs about once in every 1000 pregnancies.

It is apparently a safe rule that acute cholecystitis during pregnancy never requires operation. At least I have found no recorded instance of harm to the patient from delaying operation until sometime after delivery.

B. *Intestinal obstruction*

Several types of acute abdominal emergency apparently occur more commonly in pregnant patients than in nonpregnant women of comparable ages. These are: intestinal obstruction, hematoma of the rectus abdominis muscle, urinary calculi, spontaneous rupture of the liver and aneurysm of the splenic artery. All but the first are exceedingly rare. Only the first two will be covered in this paper.

Intestinal obstruction is more likely to occur during late pregnancy, labor or the puerperium than during early pregnancy. The incidence of intestinal obstruction requiring operation is, however, only about one in every 8,000 or 9,000 pregnancies.

Adhesions account for 70 per cent of the cases, and sigmoid and cecal volvulus account for another 25 per cent. The remaining five per cent are caused by rarer conditions including intussusception and uterine tamponade of the large bowel.

Diagnosis is sometimes very difficult. Just as with acute appendicitis the symptoms of abdominal pain, nausea, vomiting and constipation are not rare with uncomplicated pregnancies and are possibly ignored by both patient and physician. In addition, it is very difficult to determine distention in late gestation, and in the puerperium the abdominal wall is so lax that distention occurs very late.

Treatment is not altered because the patient is pregnant or has recently delivered.

C. *Hematoma of the rectus abdominis muscle*

A hematoma of the rectus abdominis muscle is not common in any type of patient. Although there is an increased incidence with pregnancy, the association of the two is, nevertheless, exceedingly rare. It is men-

tioned here only because descriptions of the condition are few.

It usually occurs in multiparas and its onset is practically always preceded by a prolonged episode of severe coughing. The diagnosis is made when a tender mass over the rectus muscle is found to be more prominent if the abdominal muscles are contracted. A late sign is para-umbilical ecchymosis.

Most reabsorb spontaneously but some must be operated before the hemorrhage comes under control. Surprisingly, the condition is associated with a fetal loss between 15 and 22 per cent but only because severe maternal hemorrhage is corrected late.

SUMMARY

The correct diagnosis of acute abdominal emergencies, never an easy matter, is even

more difficult when the patient is pregnant. The reasons for the increased complexity are described and some ways of improving diagnostic accuracy are given.

The effects on the mother and on the fetus of delayed diagnosis show that if with reasonable care one cannot establish the diagnosis it is safer to operate, even though the operation should prove unnecessary, than it is to delay for unequivocal signs and symptoms to develop. Acute cholecystitis is the chief exception to this generalization. With that diagnosis, operation should not be advised until after delivery. □

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| 4:30 p.m. | Cardiac Embryology |
| 5:15 p.m. | The Genesis of the Heart-beat |
| 6:00 p.m. | The Pulmonary Circulation |

EVENING

- | | |
|-----------|--|
| 7:30 p.m. | Epidemiology of Coronary Artery Disease |
| 8:15 p.m. | Present Status of the Diagnosis of Rheumatic Fever |
| 9:00 p.m. | Surgery of Acquired Heart Disease |

Instructors: G. Rainey Williams, M.D., Thomas N. Lynn, M.D., Jimmy L. Simon, M.D.

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*See page 12 for Ponca City program on "The Pancreas"

The General Practitioner's Role in Strabismus*

EDWARD A. DUNLAP, M.D.

The general practitioner can play a vital role in the proper management of strabismus. His failure to do so can lead to irreversible damage to sight in many children.

THIS DISCUSSION will be confined to childhood strabismus; newly acquired muscle dysfunctions in adults will not be discussed.

You and the pediatrician are in a key position, for usually you are the first physician consulted by anxious parents. You can be responsible for saving visual function in some instances, or you can be responsible for allowing irreversible loss of sight. Your advice to the parents often determines when treatment is started, and your close relationship with the family allows you to insist on continued attention if parental responsibility lags.

The main theme of this discussion is that *the most important thing the general practitioner or pediatrician can do when confronted with a patient with strabismus is to demand and obtain early examination and treatment by the ophthalmologist.* By early is meant when the turn is first seen or suspected.

A few general facts about strabismus should be known, enabling one to give proper advice or even early treatment in certain

instances. Comments on the following aspects will refresh your knowledge so you may provide sound advice:

1. Etiology.
2. Diagnosis.
3. Course.
4. Treatments.
5. General points.

The causes of childhood strabismus are roughly divisible into two groups, neurogenic and mechanical. *Neurogenic* defects are mainly caused by a congenital central imbalance between the converging and diverging mechanisms—this is by far the greatest cause. Other neurogenic causes are congenital or acquired nerve underactions and paralyses, prematurity, cerebral palsy, and childhood infectious diseases. *Mechanical* defects are largely comprised of congenital muscle defects in position or structure, plus acquired dysfunctions secondary to birth injury, refractive errors, anatomical eye defects, and childhood injuries. There may occasionally be a combined cause. Both classes of strabismus have a strong hereditary component; well over 50 per cent of all childhood strabismus is on this basis.

Depending on the etiology, a turn may be present at birth or may not show until age five or six, or even later in some acquired imbalances, though the tendency has existed since birth.

How do you establish the presence of and evaluate the state of a strabismus? The normal infant has an allowable instability of binocular coordination for its first six-eight months—but in these infants, the eyes are straight most of the time. Any *constant* turn during this period is abnormal and calls

*From the Department of Surgery (Ophthalmology), The New York Hospital-Cornell Medical Center. Presented at the Oklahoma City Clinical Society, October 29-31, 1962.

for evaluation. Any turn, constant or intermittent, appearing after or continuing beyond six-eight months is abnormal and calls for attention. A manifest turn presents no problem to diagnosis—it is there to be seen; but an intermittent turn may or may not be seen by the physician during the time the child is in his office. The parents' story of occasionally noting a turn must be accepted as true until proven otherwise by detailed and repeated examination. The statement that a child closes one eye in bright light is pathognomonic of a turn.

The presence of head tilt or turn is highly suggestive of an imbalance. Any of these points if positive call for examination of the patient. The ophthalmologist may or may not do something definitive at that time, depending on the individual case and his own concepts of therapy, but the important thing is that the child has been seen, a base line for future comparisons is laid down and the parents have the comfort of knowing that they are not neglecting the situation.

Several definitive tests for suspected strabismus are used. One is the *motility* test and it is fairly worthless; another is the *cover* test and it is excellent; a third is the *corneal reflex* test. The motility test, while widely used, is useless except in certain types of turns of relatively large amounts. Unfortunately, this is the test most widely used by non-ophthalmologists. The practice of having a child follow a finger or small object as a means of accurately evaluating the muscle status is wholly inadequate. This test fails to show any controlled turn and will often fail to show an uncontrolled turn of small amount. By far the fastest and most reliable test is the cover test, performed at distant and near ranges and in the oblique directions of gaze. The cover test consists of having the patient fixate a small light or some other small object at an approximate distance of 20 feet. A cover consisting of a small card or paddle is then placed in front of one eye, then the other, alternately switching back and forth, covering first one eye then the other. This test is repeated at one-third of a meter and should also be done in the four oblique directions of gaze. Any significant horizontal or any vertical movement of either eye as the cover is alternated indicates the existence of a turn and justi-

fies referral to an ophthalmologist. This test allows recognition of controlled turns by breaking up fusion, and of small manifest turns, especially vertical ones, that otherwise might go undetected. This detection of both controlled and small turns is imperative as these often give eye dysfunctions that would otherwise be unexplainable. This is also the test usually used to measure turns quantitatively. The corneal reflex test while cruder is still quite reliable. This is often used in children up to two years of age. A light is directed on the eyes from a distance of 12-14 inches. If no imbalance is present the light reflex is centered in *both* pupils; any imbalance present will show one light reflex off-center, 1 mm. of displacement indicating 7.5 degrees of turn.

What is the purpose behind the insistence on early examination? It is very simple and very basic. A turned eye in an infant or child almost invariably suppresses in order to avoid diplopia. This suppression will exist in one of two ways—if the *same* eye is turned constantly, the continuous suppression will result in subnormal vision in that eye, often to a severe extent. This form of subnormal vision is often called amblyopia ex anopsia; it is now more properly called suppression amblyopia. If the turn *alternates*, alternating suppression occurs and while this will not prevent the child from having even better than normal acuity in each eye, it precludes fusion and stereopsis.

These courses of development indicate that you and the pediatrician often have the responsibility of protecting visual function in a child with strabismus by early referral. If such early referral is not possible, you

Edward A. Dunlap, M.D., graduated from Western Reserve University School of Medicine in 1935 and is certified by the American Board of Ophthalmology. He is Associate Professor of Clinical Surgery (Ophthalmology) at Cornell Medical College.

Doctor Dunlap is affiliated with the American Academy of Ophthalmology and Otolaryngology, the New York Ophthalmological Society, the Association for Research in Ophthalmology, the Pan American Association of Ophthalmology and the New York Academy of Medicine.

should direct your efforts toward trying to secure or preserve good visual acuity in each eye. Fundus examination must be done, under general anesthesia if necessary, to make sure that there is no intraocular defect causing poor vision. Cataract, gross refractive error, nerve head defect, macular lesion, malignant tumor and retinal disease should be ruled out. It is not at all uncommon to have a retinoblastoma first recognized by virtue of strabismus thus drawing attention to the eye. It is embarrassing to treat an eye for suppression amblyopia only later to find some organic cause. In extremely young children when the use of charts is impossible for acuity determination, a clue regarding visual status is often given by the resistance to or the acceptance of covering one eye during testing. In other words, if the child consistently resists covering of one eye but not the other, it is quite likely that there is amblyopia in the eye he will allow to be covered.

The simplest way of improving acuity in an amblyopic eye is by full-time patching of the sound eye. It is preferable to patch full-time, and it is best done by an eye pad with total adhesive tape covering. By full-time is meant 24 hours a day seven days a week. Parents can make their own covers or can use a satisfactory commercial product called Elastoplast.[®] The usual black patch, or the plastic clip-on over a spectacle lens, or an incomplete adhesive tape patch are worthless due to the ease of peeking. The duration of patching varies with the individual case, ranging from two to 12 weeks. The younger the child the shorter the time of patching. When full-time patching results in approximately equal acuity being reasonably certain, part-time patching may then be in order.

If patching is not feasible, one-half per cent or one per cent atropine solution is used in the sound eye. This blurs vision, at least at near range. The child then theoretically uses the poor eye which theoretically is less blurred. The trouble with this theorizing is that often the atropinized eye is still less blurred than the amblyopic eye. Thus the use of atropine does not approach occlusion as a means of aid.

It must be appreciated that restoration of acuity in an amblyopic eye is difficult or often impossible after age six-eight years, and some amblyopias if established before the age of one year cannot be aided at all. Another point is that amblyopia is not correctible by glasses; their use for this purpose alone is worthless. It should also be recognized that correction of amblyopia is only one stage in the therapy of strabismus—the restoration of acuity does not automatically result in disappearance of the turn. Indeed, in most instances if the turn is not corrected following amblyopia elimination, the amblyopia will recur and the treatment will have been for nothing.

From this it may be seen that in ordinary strabismus, poor vision follows the turn. There are some turns however that follow and are the result of poor vision secondary to some anatomic abnormality in the eye, such as cataract, central choroiditis, retinoblastoma, etc.

Parents will ask how turns may be treated. In general, there are three approaches:

1. Glasses and miotics.
2. Orthoptics and pleoptics.
3. Surgery.

Glasses have very limited influence except in the therapy of one special type of turn called accommodative esotropia, which is secondary to so-called far-sightedness. Control of the refractive error controls the turn. Surgery is generally contraindicated in this type of turn—and this is the only type of strabismus where surgery is not applicable. In a few instances this type of turn may lessen with age as the hypermetropia lessens—and it is this relatively small, special subtype that unfortunately has led countless men to advise procrastination and to indulge in wishful thinking in the therapy of strabismus. This special type of turn is easily identified by the ophthalmologist so there is absolutely no excuse for parents to be told routinely to wait up to 15 years since their child might outgrow the turn. Nor is there any valid excuse for advising parents to wait until their child is ten or any other arbitrary age before instituting any form of treatment. As an incidental point, many patients with accommodative esotropia are now being treated successfully with certain miotics, allowing them to discontinue their glasses yet

remain straight and see clearly. This is certainly a worthwhile situation to attain and its accomplishment is often most dramatic to the family. There are a few myopic patients with a tendency toward an outward deviation which is controlled by glasses. With these exceptions, the most that glasses can do is to improve or equalize visual acuity and thus promote ease or increased efficiency of the sensorial aspects of binocular vision. The use of prisms is of restricted value, is technical and is of no value to you except to recognize their limitations.

Orthoptics, also loosely called "exercises," has a valuable place in the therapy of strabismus but also has limitations and restrictions. It is important to know that this form of treatment cannot create fusion but can promote it or if present enlarge its range. Orthoptics is used primarily to treat amblyopia, eliminate suppression and enlarge the range of fusion; it may be employed both pre- and post-operatively. It is usually inadequate to handle successfully turns of large amount. A special form of orthoptics has been publicized in the last few years. It is known as pleoptics. This is used primarily in the therapy of amblyopia in children over age six, when ordinary measures are inadequate. It is highly technical, time-consuming, expensive and of limited applicability. It is still experimental to a high degree and is not readily available.

Surgery generally is the treatment of choice. Ordinarily it should be done as early as the diagnosis is established and it is determined that no other therapy will be adequate. Early surgery accomplishes two important things: 1) Approximate mechanical alignment of the visual axes, thus promoting or allowing normal development of fusion and stereopsis. This is a *functional benefit*. 2) Elimination of a cosmetic defect before the child is persecuted because of it to the point of developing serious personality problems. This is a *cosmetic benefit*.

The earlier surgery is done, the greater is the possibility of effecting functional aid. However, cosmetic benefit alone is wholly enough to warrant and justify surgery. Most ophthalmologists will consider any functional benefit to be so much velvet. An incidental point is that late surgery still can effect definite cosmetic aid; so it can and

should be done at any age for this purpose but earlier surgery carries a better prognosis for a good response.

You will be asked if surgery is invariably successful and the answer is no. The nature of some strabismus precludes this, other imbalances are very complicated diagnostic and therapeutic problems, or a rare case may develop complications. But by and large the majority can be aided greatly and the likelihood of benefit far outweighs the risk of the procedure.

You will be asked if more than one operation will be needed. The answer is that no surgical response is invariably predictable and that a second operation may be necessary—or even a third—but this possibility is not justification for refusal of surgery. Some surgical maneuvers, especially those for combined horizontal-vertical imbalances are deliberately planned in two or even more stages.

There is an eye condition simulating esotropia which you and the pediatrician should differentiate, both to permit parental reassurance as well as to prevent unnecessary referrals. It is epicanthus, which gives the illusion of an esotropia, especially in lateral gazes. The absence of esotropia in this condition can be demonstrated to the parents by the cover test in older children or the corneal light reflex test in the younger. In the first instance there will be no movement of the eyes as the cover is switched, and in the second as the light is directed on the eyes it is seen to be centered in each pupil, demonstrating that the visual axes are correctly aligned.

In conclusion, some pertinent points of this discussion may be summarized as Facts and Fancies:

FACTS

1. Turns are rarely outgrown.
2. There is NO justification in advising waiting to see if this will occur.
3. Early treatment for amblyopia is necessary for vision restoration.
4. Early general treatment enhances a good functional result.
5. Early surgery is usually the best treatment (accommodative esotropia excepted).
6. Surgery for cosmetic reasons alone is wholly justified.

Strabismus / DUNLAP

7. Early elimination of a strabismus can save a child untold psychic trauma.

FANCIES

1. A child with an imbalance need not be seen until age two or later.

2. Waiting for a turn to be outgrown is logical and correct.

3. Surgery should always be delayed until age eight-twelve years.

4. Glasses will restore acuity in an amblyopic eye.

5. "Exercises" will invariably eliminate strabismus.

6. Retention of a disfiguring strabismus beyond age four-five does no harm to a child's personality.

SUMMARY

Strabismus is a complicated and often highly individualized matter. You or the pediatrician are often the first physician consulted and so are in an excellent position to render valuable service. Conversely, you can do harm or even irreparable damage by improper procrastination. It is your duty to advise and demand examination of every child having a muscle imbalance as soon as it is seen. ☐

525 East 68 Street, New York 21, New York

OSMA REGIONAL POSTGRADUATE COURSE*

"THE PANCREAS"

Ponca City Country Club, Ponca City

JANUARY 29, 1963

AFTERNOON

- 4:30 p.m. Pancreatic Function and Insufficiency
5:15 p.m. Pancreatitis
5:45 p.m. Hypoglycemia

EVENING

- 7:30 p.m. Panel—Diabetes Mellitus
Participants: W. O. Smith, M.D. (Moderator); Carl W. Smith, M.D., and John Thompson, M.D.

Instructors: John Thompson, M.D., W. O. Smith, M.D., Carl Smith, M.D.

REGISTRATION FEE \$7.50 (Includes Dinner)

AAGP Credit—4 Hours—Category 1

*See page 7 for McAlester Program on "The Heart"

Clinical Evaluation of A New Cholecystographic Agent: WIN 8851-2 (Bilopaque)

SIMON POLLACK, M.D.

Bilopaque (WIN 8851-2) was used as an oral cholecystographic agent in a series of private patients. Radiological visualization and density was excellent with minimal side reactions.

I. *Historical Development of Cholecystography and Cholecystographic Media*

Following the classic contribution of Graham and Cole in 1924,⁹ with their introduction of tetrabromophenolphthalein as a medium for opacification of the biliary tract, there have been many drugs introduced attempting to improve the accuracy of cholecystography and to eliminate hazards and side reactions. The first of these was tetraiodophenolphthalein, wherein Graham and Cole¹⁰ substituted the heavier iodine atom from the bromide in the phenolphthalein molecule. Although this gave better opacification than did the brominated product, many cases failed to visualize and many undesirable side reactions still occurred. The incidence of diarrhea, cramping and nausea was high and many commercial preparations were compounded to alleviate these side reactions.

It was not until Dolin and Diedrich,⁶ in 1940, introduced a new product, iodoalphonic acid (Priodax), in which the phenolphthalein radical was removed, that the first real improvement in biliary opaque media was achieved. However, even though the cramping and diarrhea were lessened to a great extent, because of the acid radical and higher level of kidney excretion urinary burning

became a troublesome symptom.

In 1952 a newer derivative, iopanoic acid (Telepaque), was placed on the market. The early reports on its clinical use¹⁵ indicate it had greater opacification density, less side reactions and better duct visualization than any medium available to this time. It did have about 85 per cent intestinal excretion due to insolubility hence bowel residues were often present and caused troublesome obscuring densities.

Another product was introduced in 1953: iophenoxic acid (Teridax). This did not have quite as good opacification density as Telepaque, seemed to exhibit a higher incidence of undesirable side reactions,^{1, 14} and so did not achieve a wide popularity. In a more recent study it was shown that, of all the biliary opaque media, Teridax will cause interference with PBI determinations for up to a number of years,¹¹ whereas most other media are eliminated from the system in several months.

In 1958 bunamiodyl (Orabilex), a tri-iodo butyrylamine ethylacrylic acid, was introduced in this country.^{16, 18} Its opacification density was better, and its incidence of side effects was considerably lower (except for occasional allergic reactions) than noted with other media. A high percentage of good

Simon Pollack, M.D., a Tulsa physician, graduated from Rush Medical College in 1935. He is certified by the American Board of Radiology and limits his practice to that specialty.

Doctor Pollack is a member of the American College of Radiology, the Radiological Society of North America, and is President of the Oklahoma State Radiological Society.

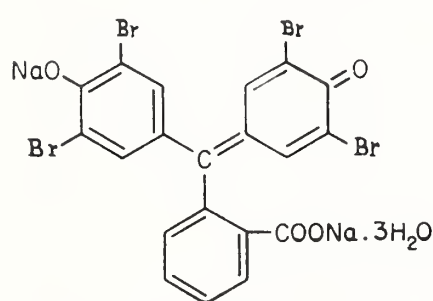
duct visualization was obtained, especially following the use of a cholagogue meal. Bowel residue was minimal and not a problem. In view of the good absorption and opacification density, a high percentage of diagnostic studies was obtained with a standard dose (4.5 grams) even in obese patients; this eliminated need for double dose techniques.

Because of its many advantages Orabilex rapidly became a widely used cholecystographic opaque medium, however, with its use a number of allergic reactions appeared. Cornelius and his group⁵ record six allergic reactions in a group of 150 patients. One case was quite severe, necessitating hospitalization for over ten days and use of steroids. Their subsequent experience and inquiry from other clinics indicated about two per cent allergic reactions. In my own office practice over a two year period there were two cases of moderately severe allergic dermatitis medicamentosa among about 400 patients. In addition there have been indications in recent literature that various oral media on occasion may cause some noxious

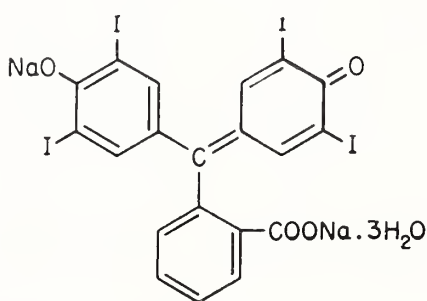
effects. Although the administration of the drug is contraindicated in the presence of kidney damage, some cases were precipitated into uremia and fatality presumably by its inadvertent administration.^{2,8} Bolt, Dillon and Pollard³ have also reported transient elevation of serum bilirubin and bromosulphalein retention within 24 hours following Orabilex and Telepaque administration, hence they recommend that these tests not be done until 48 hours after gall bladder dye ingestion. In earlier literature a similar "red herring" was reported in routine urinalysis. Following ingestion of gall bladder dye (especially Priodax) a pseudo-albuminuria occurred.¹³ This was due to precipitation of excreted dye in the urine by the test reagent. Occasionally cells and casts were seen, indicating some transient tubular irritation.

II. *The Optimum Cholecystographic Medium*

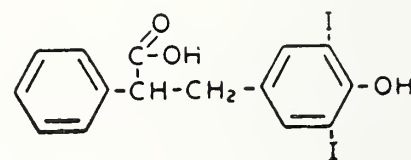
The pharmaceutical chemist has long sought an optimum oral drug for cholecystography. He has modified the basic iodinated molecule to reduce toxicity and side reactions and introduce improvements, such as better absorption, gall bladder opacification and duct visualization. The structural



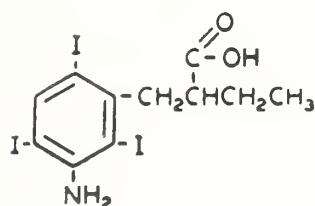
a. Chemical name:
tetrabromophenolphthalein



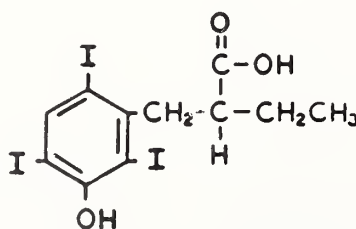
b. Chemical name:
tetraiodophenolphthalein;
generic name:
iodophthalein sodium;
trade name: IODEIKON.



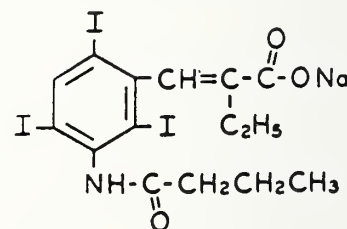
c. Chemical name: β -(4-hydroxy-3,5-diiodophenyl)- α -phenylpropionic acid;
generic name: iodoalphonic acid;
trade name: PRIODAX.



d. Chemical name: 3-(3-amino-2,4,6-triiodophenyl)-2-ethylpropionic acid;
generic name: iopanoic acid;
trade name: TELEPAQUE.



e. Chemical name: α -ethyl- β -(3-hydroxy-2,4,6-triiodophenyl)propionic acid;
generic name: iophenoxic acid;
trade name: TERIDAX.



f. Chemical name: sodium 3-(3-butyrylamino-2,4,6-triiodophenyl)-2-ethylacrylate;
generic name: bunamiodyl sodium;
trade name: ORABILEX.

Figure I. Structural formulae, chemical, generic, and brand names of various cholecystographic media.

formulae of the drugs mentioned tell this story:

The criteria for an optimum cholecystographic medium should include:

- 1. Toxicity—absent or minimal
- 2. Reactions and side effects—absent or minimal
- 3. Rapid absorption
- 4. Excretion in bile with good selective localization in gall bladder
- 5. Interfering opacities — minimal or negligible
- 6. Prompt elimination
- 7. Cost—reasonably low

At the present time there are various new cholecystographic media undergoing clinical study.^{4, 7, 12, 17} It has been my opportunity to evaluate one of these, WIN 8851-2 (Bilopaque),¹⁸ in a series of consecutive examinations during the period from October 2, 1961 to August 18, 1962.

III. WIN 8851-2 (Bilopaque): Pharmacological Data and Clinical Study

The drug sodium 2 (3-butyramido-2, 4, 6 tri-iodo-benzyl) butanoate was synthesized in the Sterling-Winthrop Research Institute.¹⁹ The structural formula in Figure II shows how it is a modification of the Telepaque molecule:

Pharmacological studies revealed decreased toxicity orally and intravenously in mice and rats (about one-half the toxicity of Orabilex). Tolerance studies showed no untoward effects in rats, dogs or monkeys in doses up to twenty times the maximum anticipated human dosage. Opacification studies in cat, dog and monkey indicated 40 per cent more effective gall bladder visualization than with Orabilex or Telepaque. Liver and kidney function studies in various experimental animals showed no toxic effects.

A group of 136 consecutive patients were given this drug for routine cholecystography.

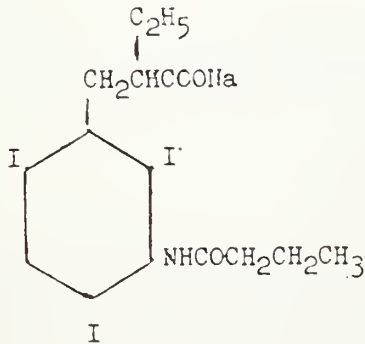


Figure II

Structural formula of WIN 8851-2 (Bilopaque).

The dosage was 4.5 grams divided into six capsules, taken after a fat-free supper between seven and nine p.m. the evening prior to the examination. Since many of these patients were also being prepared simultaneously for colon or stomach examinations, they had to cleanse the bowel with castor oil and enemas before the examination so it was difficult to evaluate incidence of significant

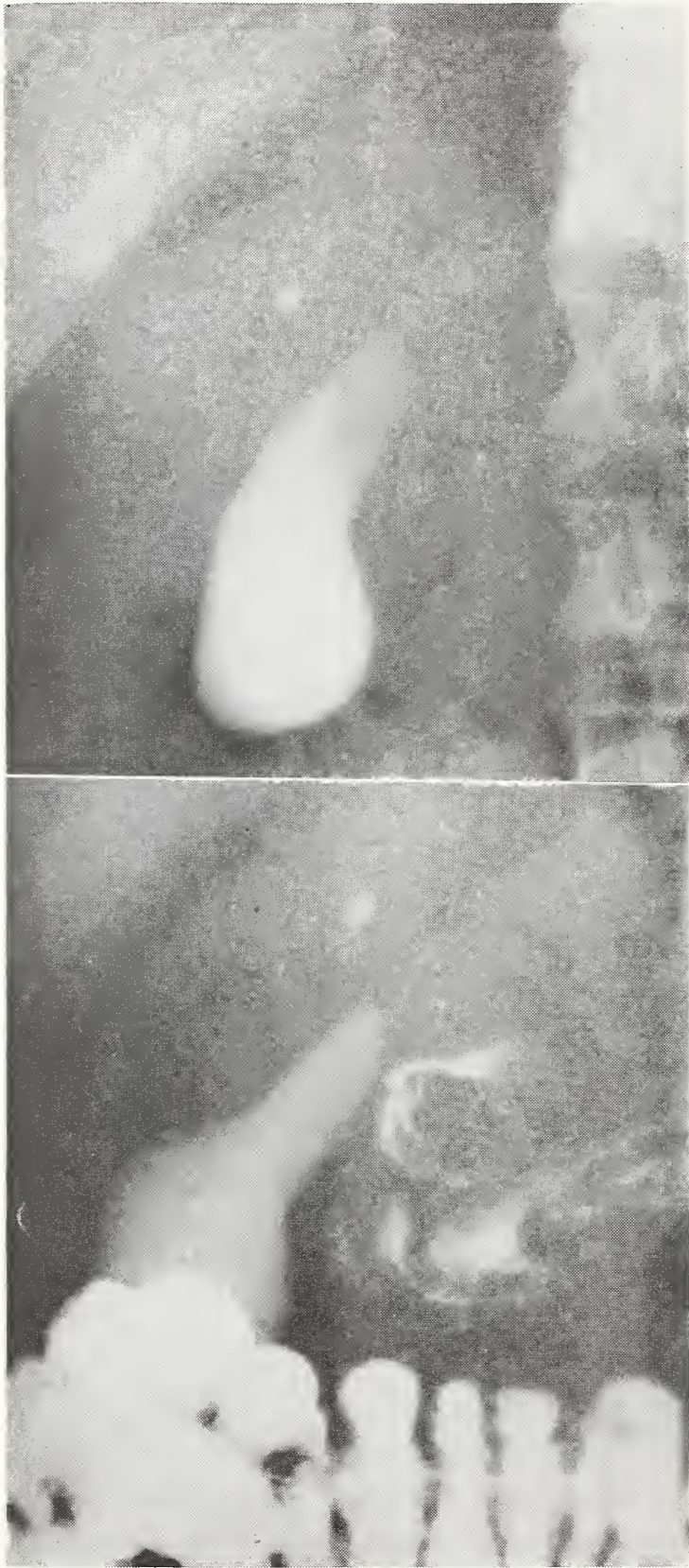


Figure III

Mrs. R. L.—Negative cholecystogram with good duct visualization after the fat meal.

side reactions. However, these were very few and, of the ten or twelve recorded, it was my impression that the castor oil was responsible. No case of allergic reaction was noted and there was no dysuria. A number of patients who had had previous cholecystograms with other media were favorable in their remarks about the lack of discomfort at the present examination.

The usual technique of PA film, upright or compression spot film and after-fat meal film were included in all cases. Of the series,

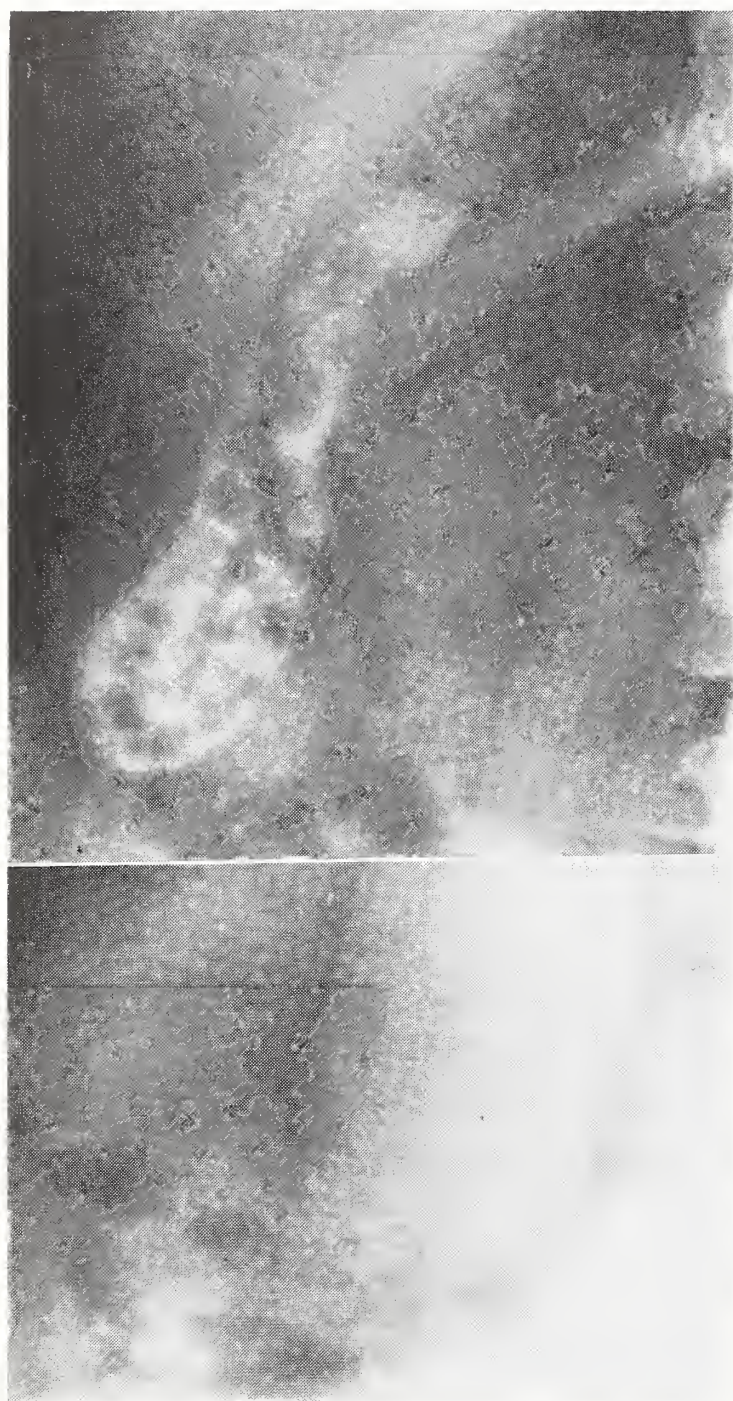


Figure IV

(A) Mrs. A. T.—Multiple negative calculi in a well-visualized gall bladder.

(B) Mrs. A. R.—The upright spot film demonstrates small calculi sinking into the fundus; they were almost invisible in the routine prone films.

119 were negative for demonstrable abnormality, gall bladder density being satisfactory and diagnostic (excellent or good in over 80 per cent, fair in 20 per cent). Of this group 45 per cent showed fair to excellent duct visualization, usually after the fat meal.

Of eight patients with cholelithiasis, seven showed some degree of opacification of the gall bladder. One case could be only demonstrated as layered calculi in the upright position. The eighth patient had a calcified opaque stone with non-visualization. Two prior examinations of this patient with Orablix and Telepaque also had demonstrated complete non-visualization.

Three patients showed small gall bladder polyps, probably of the cholesterol type. These were best seen in upright compression spot films demonstrating their fixed position on the gall bladder wall. With rotation the polyp base could be brought into optimum profile.

Two cases of non-visualization were diagnosed as chronic cholecystitis without opaque calculi; the typical clinical history was confirmatory. The four remaining cases of demonstrable abnormality included the following:

- 1) Poor visualization—proven Laennec's cirrhosis
- 2) Poor visualization and impaired contraction—proven hepatocellular carcinoma
- 3) Poor visualization—proven large hiatus hernia (Patient regurgitated capsules on first examination; recheck with powder indicated a negative study).
- 4) Enlarged common duct with delayed drainage (confirmed by intravenous cholangiograms) — probable chronic pancreatitis

Table I

Diagnostic Categories	No. of Cases
Normal visualization (negative)	119
Cholelithiasis with visualization	7
Cholelithiasis with non-visualization	1
Non-visualization	2
Poor visualization	4
Gall bladder polyps	3
Total	136

The presence of colon densities was noted in about 75 per cent of the cases. This was not troublesome in most instances. Although visible, it was a homogeneous and diffuse

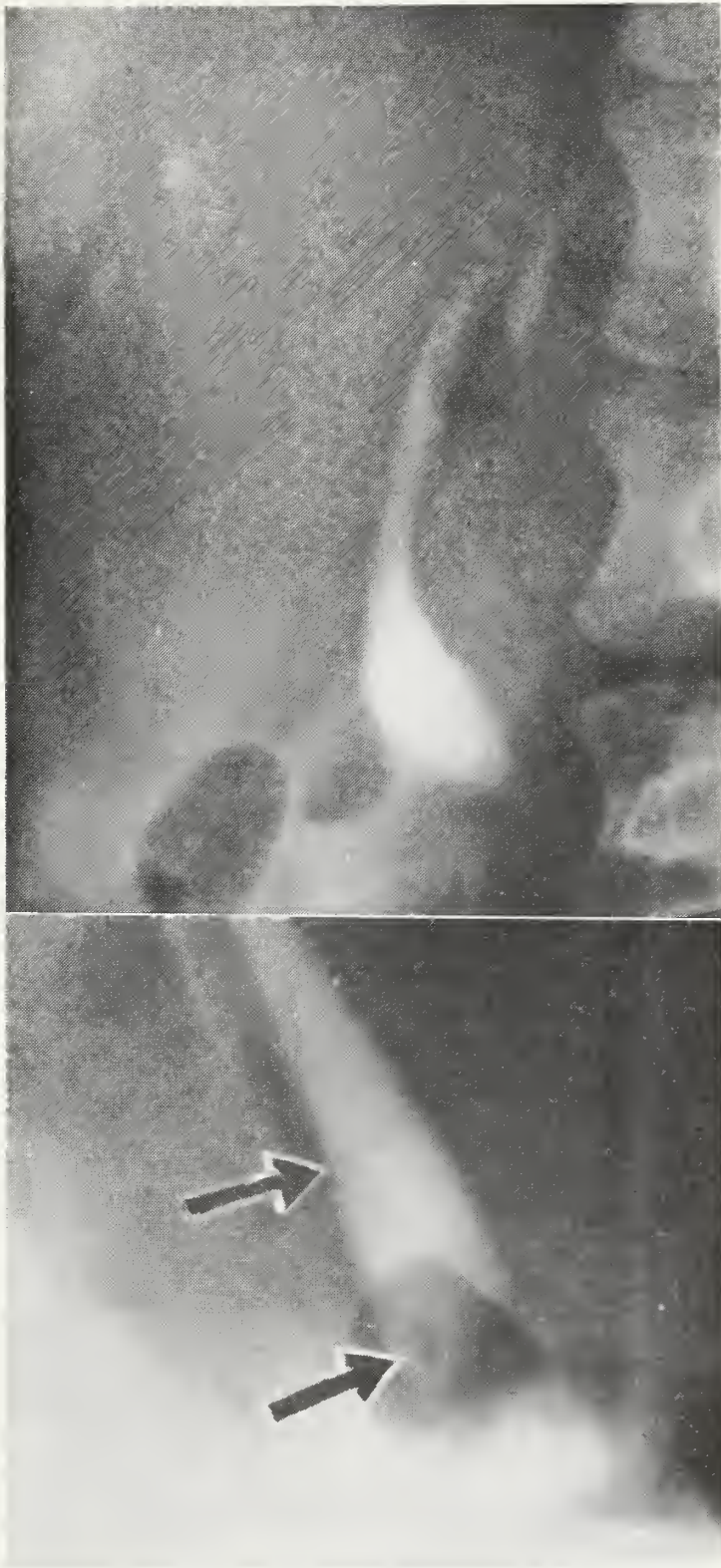


Figure V

Mrs. R. C.—Multiple polypi; the larger one in the fundus may be an adenoma and is fixed in its position in the prone and upright spot views.

bowel density but in a few cases it interfered with obtaining clear cholecystograms.

SUMMARY

Bilopaque (WIN 8851-2) a new oral cholecystographic medium, has been used in a series of 136 consecutive office patients.

Opacification of the gall bladder and the diagnostic quality of the cholecystograms were excellent, slightly superior to any medium used previously. A high incidence of duct visualization was obtained especially after fat meal studies. There was a minimum of side reactions; no allergic phenomena or dysuria were encountered. The presence of bowel residues was greater than encountered with the use of Orabilex but rarely interfered with the diagnostic quality of the cholecystograms. □

(NOTE: The Bilopaque used in the above clinical study was supplied by Winthrop Laboratories.)

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103 Utica Square Medical Center, Tulsa, Oklahoma

The Serum Transaminase in the Diagnosis of Myocardial Infarction

KEITH KLOPFENSTEIN, M.D.*

SERIAL DETERMINATIONS of the serum glutamic oxaloacetic transaminase (SGO-T) level is a valuable aid in the diagnosis of myocardial infarction in patients with a suggestive clinical picture and non-diagnostic electrocardiographic changes. Serum elevation of this enzyme has been found to be a more sensitive index of myocardial necrosis than the previously available non-specific tests such as the sedimentation rate, C-reactive protein, white cell count, and temperature curve. Reports in the literature indicate that about 95 per cent of patients sustaining an acute myocardial infarction can be expected to show a transient elevation of the serum enzyme level. In the usual case, a significant elevation may be detected within the first 12 hours, reaching peak values of two to 15 times the normal level after 24 to 48 hours with return to normal by the fourth to the seventh day. Unfortunately there is considerable variation in the rate of rise and fall of the serum levels so that occasional cases are seen in which the rise is evanescent, returning to normal within 48 hours, while in others the first rise may be delayed until the fourth or fifth day. It has recently been emphasized that a high percentage of patients with the syndrome termed status anginosus or preinfarction angina show rises in the transaminase levels indicating myocardial necrosis as late as six

to ten days after the onset of chest pain. Because of this variability it is important that serial determinations be made with daily determinations for as long as ten days being indicated in doubtful cases.

It is generally agreed that there is a rough correlation between the severity of the clinical condition and the SGO-T level. A peak rise in excess of 300 units tends to indicate a poor prognosis; however, exceptions are so frequent that serum levels are of limited prognostic value in a given case.

It should be emphasized that elevation of the SGO-T is not specific for myocardial necrosis and is of value only when considered within the framework of the over-all clinical picture. Elevations are associated with many types of tissue necrosis including liver damage, acute pancreatitis, myocarditis, severe pericarditis, renal and splenic infarcts, trauma, large pulmonary infarcts and prolonged cardiac arrhythmias accompanied by hypotension. Caution is necessary in interpreting this test in patients receiving salicylates, chlorpromazine, promazine, pyrazinamide and coumarin type anticoagulants since these drugs are known to produce elevations in some cases. Opiates are known to produce SGO-T elevations in a high percentage of patients with biliary tract disease but rarely if ever in subjects with a normally functioning biliary tract.

With careful clinical appraisal of the patient and appropriate laboratory studies the majority of the above conditions associated with elevated transaminase levels can be eliminated as diagnostic possibilities leaving the acute rise and fall of the SGO-T level a useful aid in the diagnosis of myocardial infarction. □

*Instructor, Department of Medicine, University of Oklahoma Medical Center, Staff Physician, Veterans Administration Hospital, Oklahoma City, Oklahoma.

Dean's Message

The Medical Center received attention recently as a result of a report of the Legislative Council's Interim Committee on Appropriations and Budget. After visiting and inspecting all of Oklahoma's state supported institutions of higher learning, it was their conclusion that the physical requirements of the Medical Center had been too long neglected, and that plans should be completed for construction of a new University Hospital, to be financed by a bond issue. This announcement was received warmly by friends of the Medical Center, many of whom have asked if they could be of help in ensuring its passage. Others, no less friendly, have asked for further information about why such a step is desirable at this time in order that they may decide what position to take.

The existing University Hospital was constructed just after the first World War and the Children's Memorial Hospital ten years later. They served their purpose well for a good number of years, but are no longer adequate. In order to keep reasonable pace with the advance of medicine, we have had to make new services and offerings available. The student enrollment has increased markedly; training programs have been expanded and new ones started; and the patient load has more than doubled. Moreover, there has been an expansion of medical care in every field. For example, the care of the "crippled

child" is certainly very different today and much more is needed than open wards.

Because the two hospitals are located a block apart, too much expensive duplication is required. Consider the inefficiency and expense of two radiology units, two diet kitchens, two clinical laboratories, two record offices and administrative supporting units. The buildings have almost negligible provision for the staff and for students. The distance between the delivery rooms and the pre-mature nursery is unwise, as is the duplication of emergency rooms, clinics and equipment. The deficiencies of a bygone internal design are incorrigible without enormous expenditures. Most of all, the total space is so inadequate that crowding, lack of patient privacy, and much discomfort has resulted.

Physicians everywhere appreciate the importance of adequate physical surroundings for the proper conduct of their diagnostic and therapeutic efforts, and the contribution which the surroundings make to the security and comfort of their patients. Recently a group of national consultants visited our Medical Center. It was their recommendation that a new hospital should be supported wholeheartedly and such facilities would be necessary for the proper growth of the institution. Many of the private hospitals in the state have been expanded and modernized in recent years, and the needs at the University Hospitals are no less. □

Mark R. Everett

A Look at the Newer Immunology

*1. Immunophysiology**

ALEXANDER H. WOODS, M.D.**

THE PURPOSE of this report is to take a brief look at the field of modern immunology with the intention of seeing what it has to offer in clinical medicine. The reasons for attempting this lie in the interested responses of clinicians to the amazing growth of immunology over the last fifteen years, and to their attempts to apply some of its theories and principles to their own practice. Many of these attempts are premature, since immunology is still largely a laboratory science and unready to enter the clinical domain on other than an experimental basis, and yet the promise of radical and effective new treatments for diseases which have been untreatable for so long has opened new vistas which are hard to resist. There have been sobering failures in attempts to apply the results of animal experimentation to man and with them has come an increasing awareness of the vast complexity of the immune apparatus which has disheartened those who hoped for an early breakthrough. Tissue homografting, for example, which once seemed on the threshold of common clinical usage has never developed to this point and

is still being studied. Immunologists, too, have been aware that unsuccessful attempts at modifying the immune apparatus may not always be made with impunity. Lethal reactions may ensue and the threat of these has dampened human experimentation.

These bleak remarks have been included in the opening paragraph to instill a measure of reserve in reading what comes after. Immunology today is very like an iceberg of which only the exposed tenth is explored; the rest may hold surprises capable of modifying or destroying present thinking. With these caveats, let us proceed to consider some of our current immunological knowledge.

WHAT IS IMMUNOLOGY?

Originally, immunology consisted of two parts quite far removed from each other. One was serology, the study of the appearance of antibodies in the blood following infections or other stimulation by antigens. The other was allergy, a clinical specialty dealing with the general topic of hypersensitivity. The gulf between these two used to be wide, so wide that, even after the rapid advances of the last few years, there are some who would boggle at putting them into the same discipline. Today, however, there are threads of evidence that serology and allergy represent opposite poles of one broad field to which we give the name immunology. In this report, to emphasize this, immunology

*First of two presentations concerning Immunology. The second will appear in a subsequent issue of The Journal.

**Department of Microbiology, University of Oklahoma School of Medicine.

has been divided into two broad areas, immunophysiology and immunopathology.

By immunophysiology is meant the sum total of all immune reactions which are normal responses to the environment. It includes equally the development of resistance to infection and the removal of harmless foreign substances by immunological means. Most such reactions proceed silently and all are to the benefit of the host. By immunopathology is meant all those immune reactions which are harmful to the host including allergy of all types, delayed hypersensitivity, the rejection of homografts (which could be regarded as physiological) and the autoimmune reactions.

It is easy enough to state that these reactions are related but it is another thing to trace the elements which are common to them all. Basically, they represent acquired responses to antigenic stimuli which result either in the manufacture of a series of specific serum proteins called antibodies or in the appearance of a series of specifically adapted cells which might be called cellular antibodies. The former function in the reactions of classical serology, they take part in precipitin, agglutinin or hemolysin reactions and are conveniently studied by common laboratory procedures. In most allergic reactions, antibodies are also involved but are difficult to detect because they fail to enter into serological reactions. They do not produce precipitin or agglutinin reactions; their presence is signaled chiefly by the disease they produce, such as hay fever, food allergy, etc. This peculiarity of allergic reactions has delayed their understanding and accounts for their being placed in a separate category for so many years. The cellular antibodies are the most recently described components of immune reactions. They function in the absence of antibody proper (i.e., they are present in agammaglobulinemia) and are involved in delayed hypersensitivity reactions such as those encountered in tuberculosis, other chronic granulomatous diseases and in homograft rejection reactions. It is not at all clear whether these cellular antibodies ever take part in physiological immune reactions; their chief importance so far has been in pathological ones. They do, however, arise transiently during immunization to routine antigens such as diphtheria

toxoid and seem, therefore, to be a part of the general reaction mechanism of the immune apparatus.

Apart from the fact that these various types of antibodies are all acquired responses to antigens, they share the quality of being highly specific in action. They are able to single out antigens which cannot be separated by other methods. The physicochemical nature of their combination with these antigens has been studied at length. We know that no change is produced in either antigen or antibody as a result of their combination; they may be separated again without loss of any characteristics of either. But antigen-antibody reactions *in vivo* take place in an environment crowded with many other systems, some of which may be triggered by them with the release of powerful secondary effects. For example, if the antigen is located on the surface of an intact cell, combination with antibody may lead to the activation of complement, a proenzyme system of blood, with resulting lysis of the cell. Again, antigen-antibody combination may lead to the release of histamine or serotonin from neighboring platelets or basophils and these may produce extensive responses on adjacent tissues. These are ancillary reactions, however, and are not immune reactions in the sense that they are neither acquired nor specific.

What, then, are the actions of antibodies alone? They combine with antigens, to be sure, but essentially what does this accomplish? The answer to this question is quite simple and mechanical, at least with antibodies of the serological type. Their action is simply to facilitate the removal of foreign substances from the blood, as has been demonstrated many times.¹ An antigen labeled in some manner (usually with radioiodine) is injected into an animal and the rate of clearance from the blood followed. For several days there is a slow, steady decline at the same rate the animal's own blood proteins are degraded and removed. Then there is an abrupt downward break in the curve and the antigen disappears from the blood in a matter of hours. At the same time, antibody can first be detected. If the animal has been given the antigen before and already has antibodies against it, the initial slow phase of removal is abolished and the antigen

is cleared immediately. How is this accomplished?

Here again, the immune system makes use of ancillary devices. In the case of soluble antigens dissolved in the blood stream, scavenger cells of the reticuloendothelial system are powerless to screen them out. Phagocytes engulf particulate things for the most part, and they lack a sensing system to determine whether something is foreign. Antibodies bridge this gap. They convert soluble antigens into insoluble aggregates, much as can be observed in a test tube precipitin reaction. These aggregates are now liable to phagocytosis and, therefore, to removal from the blood stream by the usual processes of ingestion and digestion.²

If this is the general mechanism of antibody action, what can be said about allergic antibodies which do not precipitate and cannot form engulfable aggregates? Certainly, if any usefulness is to be found in them, some other route of action must be sought, otherwise they would have to be regarded as an entirely pathological aberration of immunity. This question will be raised again later, during the discussion of immunopathology. Then, too, more will be said about the cellular antibodies since they also fail to participate in classical serological reactions. Let us assume for the moment that the inclusion of all these different types of reactions under the overall heading of immunology is, indeed, justified, and proceed to consider in more detail the implications of immunophysiology.

IMMUNOPHYSIOLOGY

I. *The Immunological Apparatus:* We have touched on the components of the immune apparatus which are involved in physiological reactions. They include antibody of the serological, or precipitating type together with the secondary effects of phagocytosis and digestion. In order to decipher the mechanisms underlying these reactions, we shall also have to include the tissues producing these antibodies. Most immunologists would agree today that the chief site of antibody synthesis is in the plasma cell family, distributed throughout the reticuloendothelial system. These cells are of tremendous

interest to geneticists and biochemists, for they provide a rare opportunity of studying both the synthesis of a specific protein which can be initiated on demand and detected with ease, and the transmission of an inherited quality, namely, the ability to make this protein, through many generations. There are vast amounts of material bearing on the behaviour of these cells, most of which will be ignored because of its lack of clinical application. Some of it is vital to the development of immunological theory and will be included later on as these theories are considered.

II. *The Problems of Immunophysiology:*

One might wonder, in a review of this type, why it is necessary to spend so long on physiological reactions when it is the pathological ones which are of chief clinical interest. This is done deliberately to give time and space to recapitulate the thinking which has led to the concept of autoimmune disease and to the hope for homografting. Moreover, immunology is not so different from other disciplines that an understanding of physiology is not essential and prerequisite to an understanding of pathology. The immunophysiological system is well enough defined so that pointed questions can be asked and, with current techniques, a surprising number of answers gained.

We have already seen that the immune system has two qualities which ideally suit it to act as front-runner to the reticuloendothelial system in the removal of foreign substances. These are its ability to distinguish foreign material from native ones (i.e., self from not-self), and on this basis to elaborate a specific aggregating protein. This is an informed response which must either be hooked up with some intricate system of internal checks and controls or require the existence of a separate immunological intelligence of some sort. The crux of it appears to be the recognition of self from non-self with the ensuing constraint against self-reactions. Does this arise from some quality in the self molecules by which they are marked out, or is it a quality of the antibody-forming cells?

Let us turn to an examination of the nature of antigens to see if an answer to these questions can be found. From this, some

qualities of cellular responses to antigens will be brought up and, finally, with this material in hand, we shall be in a position to inspect the development of current immunological theory.

III. *The Antigenic Spectrum*: It is easy enough to define an antigen in broad terms: It is a substance capable of stimulating an immune reaction in a given host. But this definition begs the question. Keeping in mind the fact that immune reactions are marvels of specificity, that they are capable of distinguishing between antigen molecules which appear identical by most available chemical and physical techniques, it becomes essential to know further details concerning the exact stimulus which sets this precise machinery into operation.

The crucial question, one which has perplexed immunologists for years, is not why the immune apparatus *does* react to antigens but why it does *not* react to the host's own proteins, most of which are excellent antigens in other species. How are self-components spared from immune reactions? Are we to impute some sort of intelligence to the immune system which allows it to discriminate self from not-self? It might be imagined that a question of such fundamental importance has not gone without a good deal of thought and conjecture, and such is indeed the case. Some of the salient points of this thinking can be summarized as follows.

A. *A Genetic Code for Antigens*: One possibility which would not only explain discrimination of self but also strike deep at further questions yet unmentioned is the existence, ready-made, in the genetic complement of each individual of a specific template for every possible antibody. Such templates would require only stimulation by the appropriate antigen to set in motion the biosynthetic machinery leading to antibody elaboration. No learning or adaptation would be required, just an antigenic stimulus. Attractive as this explanation might be, it is struck down by several objections. The number of possible antigens is virtually infinite. New ones are produced in synthetic chemistry laboratories daily. To assume that all these molecules not only have been recorded genetically but also somehow predicted is too much to swallow. Not only this, but, from our present knowledge of genetics, the avail-

able storage space in the genes would be overloaded a thousand-fold by this flood of information. We must, therefore, assume that individuals are not born carrying from their parents an inherited body of immunological information but that each person must determine from individual experience what is antigenic and what is not. This type of learning experience must take place early in life, either during fetal development or in the immediate postnatal period. We shall see later that many separate pieces of evidence have all pointed to the truth of this hypothesis and that immunological events in the perinatal period do proceed as if an intense learning experience were taking place.

B. *General Nature of Antigens*: Proteins, almost all of which are antigenic in a properly chosen recipient, are complex structures composed of folded chains of amino acids. Many are linked further to carbohydrate or lipid subgroups. For the purpose of studying their antigenicity, the surface configuration is of paramount importance, since there is no evidence to suggest that groups hidden deep within the interior of the molecule are antigenic. It is axiomatic that a protein, to be antigenic, must exceed a certain size but no sharp cut-off point has ever been found. A molecular weight of 10,000 is often quoted as a *sine qua non* of antigenicity, with smaller molecules such as drugs being antigenic only after combination with some host protein to form a high molecular weight complex (i.e., the combination of hapten with carrier). Also, it is generally thought that the bigger the antigen, the more active it is in provoking antibody formation. From work with synthetic haptens, it is possible to plot roughly the minimum area on the surface of a molecule which would be necessary and sufficient to form an antigenic patch. With this information it is possible to predict that large molecules may have hundreds of antigenic sites upon their surfaces, most of them probably different from one another. A large protein molecule becomes, therefore, a stable aggregation of many discrete antigens, any one of which is capable of stimulating the production of an antibody specific for it alone. On this basis, one might expect that corresponding proteins derived from closely related organisms might have more of the groups in common than would be the

case for distant species, since the control of protein synthesis and, therefore, presumably antigenic specificity is vested in the genes. Table I shows some findings by Nuttall over 60 years ago.³ He studied the cross-reactivity of various animal sera against three antisera prepared in rabbits against human serum. The declining percentage of cross-reactivity as animals more and more distantly related to man are tested is clear. The potential usefulness of immunologic techniques to the study of genetics is well illustrated by this classic experiment.

TABLE I (from Nuttall)

Cross-reactions between rabbit antisera to human serum proteins and the serum proteins of various other animals.

Species	Per cent Cross-Reactivity		
	Antiserum No.		
	1	2	3
Man	100	100	100
Chimpanzee	—	—	130
Gorilla	—	—	64
Orangutan	47	80	42
Mandrill Baboon	30	50	42
Spider Monkey	22	25	—
Cat	11	—	3
Dog	11	—	3

Proteins are not the only antigens. Both carbohydrates and lipids may be antigenic, although the antigenicity of lipids is so slight that it is disputed. Carbohydrates may be extremely potent antigens. Pneumococcal capsular polysaccharides are a prime example. There is, however, much less possibility of structural variation among carbohydrates than proteins and consequently there is more cross-reactivity between them. Carbohydrates are more enduring; they are resistant to many influences such as heat, acid, etc., which would destroy proteins. This quality has been useful in forensic medicine where blood stains may be identified after years due to the fact that the human blood group antigens are carbohydrates.

All of this would indicate that there is no special quality to an antigen, nothing which sets it apart from other substances. The fact remains that there is no way to detect the antigenicity of a substance except by seeing if it provokes antibody formation. The means, therefore, by which an organism's immune apparatus is restrained from re-

action against some antigens (its own tissue components) and released against others must be based upon other grounds than the gross physical or chemical differences between them.

C. *Antigens through Denaturation*: Modern immunology has made much of the possibility of autoimmune disease. By this is meant that an individual for some reason commences an immune reaction directed against some normal component of his own body, which suffers in some characteristic way as a result. Autoimmune diseases themselves are considered later: Here we are more concerned with the nature of the responsible antigen. One of the most ancient axioms of immunology is that laid down by Paul Ehrlich 75 years ago, the doctrine of "*horror autotoxicus*", on the basis that it would be both foolhardy and suicidal for the body to react against itself. Although no proof of the doctrine was ever produced, both the available facts and good reason supported it. For many years no system was observed in which an immune reaction was directed against a self-component, until perhaps the first inkling was provided by Hargrave's description of the L.E. cell phenomenon in 1948.⁴ The chain of inquiry which followed came up with the apparent fact that, in disseminated lupus erythematosus, one or several antibodies directed against the host's own nuclear material occur. Then, in 1955, Heidelberger, during the course of studies on the chemistry of pneumococcal capsular polysaccharides, noted that some of these were composed chiefly of polymers of glucose with the same type of linkage found in liver and muscle glycogen.⁵ He tested human antisera against these polysaccharides for cross-reactivity against human glycogen and found it strongly present. Here, then, were two examples in which *horror autotoxicus* seemingly fell down. Other observations provided the foundation upon which the whole concept of autoimmune diseases has been erected. What modification could be imposed upon existing theories of antigenicity to explain this abrupt and haphazard change in the behaviour of previously innocuous substances?

Two fundamental explanations have been advanced. The first holds that a native protein molecule, although not subject to im-

immune action in its pristine form, is subject to a whole series of random influences which might so change that form that it becomes immunologically unrecognizable and is reacted against as a foreign substance. Infection, burns, and wounds might produce such a change. Furthermore, this change might not mutilate *all* the original antigenic patches into a new configuration. Some might escape but provoke antibody formation in the general upheaval. These antibodies could now circulate and combine with unchanged proteins of the same type, producing a vicious cycle of disease limited to and characterized by the distribution of the particular protein(s) involved. Not too much experimental evidence supports this view. Denaturation, to be sure, will modify or destroy the antigenicity of proteins; however, it has yet to be proved that any *new* antigenicity is gained thereby.

Another objection was provided by Heidelberger's work. Carbohydrates do not denature readily and the ones studied by him were ostensibly intact. This led to the second explanation which grew out of a theory put forward by Burnet. Here, it was assumed that the antigen or autoantigen (glycogen in this case) normally existed in a sequestered location remote from the bloodstream and lymphatics. This meant that it logically could never have reached the developing immune apparatus back in the neonatal times when the list of antigens and nonantigens was being compiled. The antibody-forming tissue, having had no prior experience with this particular substance, could not help but regard it as foreign and, therefore, react against it blindly. This reasoning has been applied to several autoimmune diseases but it obviously will not work for lupus. The nuclear antigen of lupus circulates freely in all body fluids. In the form of pus, the antigen is released from its intracellular location in a host of major or minor infections. Nuclear material from effete cells of all types is constantly engulfed by the same family of cells which produce antibodies. We have, then, two examples of autoimmune reactions and an explanation for each, the latter, unlike most immunological phenomena, failing to cross-react.

If we accept either or both of these explanations, a variety of trigger mechanisms

for either type of reaction can be visualized. All that is necessary is that an antigenic grouping similar to that of a self-component be presented to the immune machinery. This could come easily from outside. Infection could provide such a grouping on the surface of a bacterial cell, or it could be absorbed from the gastrointestinal tract in the form of food protein. The examples of rheumatic fever and glomerulonephritis with their close association with streptococcal infections illustrate this. In the second explanation, sequestered native proteins could be dislodged artificially from their remote locations. Trauma to either muscle or liver could release glycogen into the blood, for example. The surgeon's knife could do the same, as could infection, etc. As can be seen, once the bare possibility of self-components turning antigenic is accepted, the ways in which this could come about are legion.

IV. *Immune Paralysis*: So far, the main tenor of this review has been directed at gaining an understanding of the recognition and discrimination processes of the immune system. There are a few more pieces of evidence to be digested before the whole picture of this puzzle, as we now see it, is complete. One of these is the phenomenon of immune paralysis. This term refers to the complete blocking of antibody formation which follows when a potent antigen is given in tremendous excess. Immune paralysis was first observed by Felton in 1949 upon injecting pneumococcus polysaccharides into mice.⁶ The failure of antibody response is specific for the antigen given in excess; other antigens continue to evoke their usual responses. The state of paralysis is not permanent, although it at first seemed so to Felton since the polysaccharides he used were not digested by the mouse and persisted permanently. When the same approach was tried with digestible antigens such as bovine serum albumin it was found that the amount of bovine albumin had constantly to be refreshed requiring huge doses at frequent intervals. If allowed to fall below a certain level, antibody formation to it would gradually begin. Immune paralysis, therefore, requires the continued presence of over-powering amounts of antigen.⁷

The observation of immune paralysis gave immunologists something to conjure with;

this effect of singling out and blocking a single antibody response among myriads was totally unprecedented and still has no satisfactory explanation. It immediately suggests certain speculations concerning the inner workings of the immunological machinery. For one thing, it would appear that antibody-forming cells are not totipotent with respect to the antibodies they can form. The evidence from immune paralysis indicates that only those cells producing antibody against the excessive antigen are affected. If other cells could leave off manufacture of unrelated antibodies and come to the assistance of their fellows in distress, immune paralysis could not occur. There would simply be an arrogation of more and more of the antibody-forming cells to the production of this one antibody until, finally, an edge was gained and the influx of antigen could be matched. Following this, the recruited cells would be returned to their original duties. Since this does not occur, it appears that each antibody-forming cell becomes frozen in the production of a single antibody.

How, then, is this group of cells, dedicated to the production of one particular antibody, suppressed by excess homologous antigen? Here is a puzzler whose answer requires the use of pure hypothesis. If we imagine that a cell makes an antibody molecule and secretes this into the blood, it is logical that, for a short time, the antibody is located on the cell surface. Since antigen is present in huge amounts and ubiquitous, it will most probably combine with the antibody as soon as it appears, i.e., on the cell surface. Recalling now the actions of complement touched on earlier—that it becomes activated at the site of antigen-antibody combination and that, when activated, it is capable of cell lysis—we have the threads of an explanation. Antigen combines with antibody upon the surface of the cell; this activates complement, which either lyses or temporarily inactivates the cell. Repeat this effect a sufficient number of times and the entire capacity to form this one antibody is eliminated. Using the fluorescent antibody technique, Coons has searched the spleens of paralyzed animals for antibody forming cells

and found none to be present,⁸ which would support this line of reasoning.

If this scheme is accepted, what is the mechanism of recovery after the level of antigen declines? Presumably, it is analogous to a primary immunization. New groups of cells are stimulated by the antigen and “frozen” into producing its homologous antibody. This time, antibody secretion into the blood can and does occur since antigen concentration no longer suffices to seek out and combine with each antibody molecule before it is released. Gradually, antibody production builds up and the paralysis is over.

It must be remembered that this theory is pure conjecture and unsupported by facts. It usefully illustrates the ingenuity frequently required of immunologists to produce explanations of their recalcitrant subject. The fact of immune paralysis remains, however, and must be reckoned with as a possibility in human disease. It is clear that complete suppression of a single antibody can occur in the face of overwhelming exposure and without warning from such signals as depression of the total gamma globulin level or reduction in the titers of any other antibody. Demonstration of spontaneous immune paralysis in man has not yet been described, probably due more to the difficulty of detecting it than to its rarity.

V. *Tolerance*: Preceding by a few years the description of immune paralysis, the first pieces of evidence of immune tolerance came from Owen's work with dairy cattle, published in 1945.⁹ Owen initially observed a case of superfecundation in which a pair of twin calves was fathered by sires of different breeds. Each twin was found to have a mixture of two different red cell types, one deriving from each twin. It appeared that a mixture of red cells had occurred through a placental shunt during gestation, and that the exchange had also involved red cell precursors since the two populations of mixed red cells continued to exist in a stable proportion during the life of the twins. In effect, a reciprocal bone marrow graft had taken place *in utero*. These studies were extended to several hundred sets of twins and higher multiple births with similar results. The situation observed by Owen is analogous to what might happen if a man or woman

were found to have both types A and B red cells circulating harmoniously together and with no immune reaction or isohemagglutinin activity observable. The fact that placental shunts of this sort with attendant mixtures of blood-forming cells also occur in man was first shown by Dunsford in 1953.¹⁰ Such individuals were known as mosaics or chimeras with respect to the mixed cells, and attention began to focus upon the mechanism of this phenomenon.

Owen, in 1948,¹¹ began experimenting with parabiotic pairs of rats. Such animals, unified surgically, exchanged blood freely and soon had complete intermixtures of their circulations. If then separated, the foreign cells were gradually eliminated and not replaced. If allowed to remain in union, the capillary connections between them occluded and each rat gradually reverted to his own blood type. The rats used were young but not young enough. Burnet, in Australia, seized upon this salient fact and promulgated in 1949 the first version of his theory of antibody formation.¹² Burnet postulated that antigenicity is a learned attribute and that every newborn animal must determine alone what is self and what not-self. We have touched already upon some of the reasons for this. He made the obvious assumption that the only thing a newborn animal is equipped to recognize is self. The host of not-self substances has not yet been encountered. Therefore, the initial act of the maturing immune system must be an inspection and recognition of self components. As postulated in the section on immune paralysis, this would include only those materials present in the fluids bathing the developing immune system. After recognition of self, Burnet postulated that the memory books would close and everything not recognized at that point would thenceforward be regarded as not-self or foreign and a target for an immune reaction.

Since 1949, Burnet has twice modified his views drastically. There were obviously unworkable facets to his first theory. He had invented a system of "self-markers" by which recognized self molecules could be recognized again and again; this was cumbersome and unlikely. He had no adequate explanation for immune paralysis, and there were other areas of strain which led, over

the years, to the gradual emergence of what is now known as the clonal selection theory, advanced by Burnet in 1959.¹³ This most recent of Burnet's theories will be developed later on; at present it remains to see what fruits his first theory bore in the experimental laboratory.

Medawar and his group in London took up Burnet's suggestions and put them to a series of brilliant tests.¹⁴ Medawar reasoned that, prior to closure of Burnet's memory books (the stock-taking period) in neonatal life, it might be possible to introduce an ersatz self-component, an immunological ringer, which would artificially be recognized as self by virtue of being present in the right place at the right time. Medawar chose, as his experimental system, two strains of inbred mice, let us call them white (W) and black (B). W mice fail to accept skin grafts from B. Such B grafts are uniformly rejected in ten days. Since both strains are inbred, i.e., genotypically uniform, any pair of W and B mice behaves like any other. Medawar then removed the spleen of a B mouse and prepared a cell suspension. This was injected through the abdominal wall of a pregnant W mouse into the developing fetuses (a drop of oil on the abdomen of a pregnant mouse renders it almost transparent). The W fetuses were born and grew to young adults and at this time Medawar challenged them with a B skin graft. His reasoning was, retrospectively, simple and direct. If the B cells had been introduced before the end of the stock-taking period of Burnet, they would have been recognized as self by the W fetuses and this recognition should hold good for any B cells encountered in later life. Accordingly, there should be no reaction against the challenging skin graft and this was found to be the case.

Medawar's brilliant experimental verification of Burnet's theoretical approach resulted in the sharing of the 1960 Nobel Prize in medicine between them. It also provided a tremendous impetus to the growth of immunology which had been languishing in the doldrums of classical serology for 50 years. It led directly to the burst of enthusiasm for tissue homografting in man which is only now abating. Medawar named this phenomenon acquired neonatal tolerance. He showed that it, like all immune reactions, was a

marvel of specificity; only B mice were involved in the state of tolerance, and skin from all other strains was rejected as before. He also showed that the state of tolerance could be abolished by transfer into the tolerant W mice of lymphatic tissue taken from an adult, non-tolerant W mouse. This tissue, having closed its books without experience with or recognition of B cells, found itself abruptly moved to a new home where everything was familiar except the presence of a B skin graft. The new tissue immediately set about removing the foreigners, and tolerance was ended.

The subject of tolerance has been extended in many ways and subjected to countless experimental modifications. Out of all this work has come one salient fact which shook the whole theoretical house upon which tolerance was built. According to Burnet, it should only be necessary to introduce an antigen once, immediately prior to the stock-taking period, in order for lasting tolerance to ensue. Medawar's experiments showed no defect in this reasoning; however, the B cells introduced by Medawar in fetal life were living cells capable of division and growth. It later became clear that this, indeed, is what had happened; living B cells had persisted in the W hosts. This harks back to the description of red cell chimeras in cattle by Owen, where mixed populations continued to exist for the life of the animal. When attempts were made to induce tolerance to non-living antigens the state of tolerance produced was not permanent but died away after variable periods. It could be stabilized by repeated injections of the antigen and this made it clear that, in order for tolerance to persist, the antigen inciting it also had to persist.

But this finding threatened the existence of the whole concept of neonatal stock-taking. It is suggested that the "books" never closed but were merely more suggestible in the neonatal period. To produce the same result in adult life, huge quantities of the antigen had to be used and the phenomenon was then called immune paralysis. Was it possible that this was the only difference between tolerance and paralysis—the age at which the injection was performed? Present

evidence would indicate so and, as a corollary, current thinking about the nature of immune reactions has changed from the idea of a series of finite stages of development to a more dynamic concept in which constant flux and change is taking place in the recognition of self and in the nature of response to antigens. Such abrupt changes in thinking have made the evolution of immunologic theory over the last decade a kaleidoscope which might well have made it incomprehensible to the casual reader were it not for the major efforts of Burnet to revise and modify his own published thinking in step with the accumulation of experimental evidence. Burnet completed the third major revision in his thinking in 1959 with the publication of the clonal selection theory of acquired immunity,¹³ which we shall consider next.

VI. *The Clonal Selection Theory:* The clonal selection theory is one of the major milestones of biology. It unifies in one place and as part of a continuous body of thought almost all of the phenomena of modern immunology. Because of this and because of the sheer virtuosity in its conception, those who can afford the time would be fully rewarded by reading the small volume in which Burnet first elaborated this idea.¹³ These encomiums are deserved but are not meant to obscure the fact that clonal selection is still a theory. It bridges over areas of total ignorance in order to connect areas of knowledge, and some of the bridgework is rickety indeed. Burnet himself is the first to admit that the theory is proffered more to stimulate effective investigation than as a finished version of biological law.

That Burnet's theories have done just this is apparent from what we have already taken up. Medawar's work was rooted in one of them and much of the thinking of autoimmune diseases is based upon them. A good deal of the excitement in doing immunological research today grows out of the desire to test Burnet's metal and, perhaps, develop a small theory of one's own. An essential ingredient of Burnet's success has been his ability to incorporate other investigators' ideas into his own thinking. This is well illustrated in the clonal selection theory, a large part of which is adapted from a theory elaborated by Jerne in 1955.¹⁵

A. *The Natural Selection Theory of Jerne*: At the time Jerne came out with his theory, opinion was divided upon the significance of the large amount of gamma globulin circulating in the blood. Most if not all known antibodies were located in the gamma globulin fraction, and it was suspected that the entire fraction might be made up of specific antibodies. Yet, through the literature, various authors were prone to refer to "normal" gamma globulin as opposed to antibody gamma globulin, as if they were uncertain of this. In germfree animals the gamma globulin is reduced to about half normal values¹⁶ which suggests that about half the normal complement is concerned with bacterial, viral, protozoal or other agents which are the common experience of non-germfree life. What, then, is the remaining half, still present in the germfree state, concerned with? By analogy, this would amount in man to about 50 grams total, or 0.4 grams per 100 ml. of blood, a not inconsiderable amount. No one knows the answer to this. Proponents of the thought that *all* gamma globulin is specific antibody are quick to point out that germ-free does not mean antigen-free. Food proteins are absorbed intact in appreciable amounts,¹⁷ as anyone with a food allergy can document. Furthermore, autoclaving diets for germfree use kills living agents in the diet but does not remove their carcasses which still contain many of the antigens intact. Here would seem an ample variety of antigens to account for all remaining gamma globulin.

On the other side are those who believe a certain amount of random activity occurs in antibody-forming tissues. Non-specific gamma globulin molecules are synthesized erratically and shed into the blood where they show up as "normal" gamma globulin, perhaps the half remaining in germfree life. Jerne's hypothesis is built upon such a speculation. He holds that the random gamma globulin synthesis is sufficiently extensive and diverse that any antigen chancing to enter the blood will encounter one fitting it closely enough to produce combination. He then suggests that this combination, in some unknown manner, homes back to cells capable of replicating the gamma globulin molecule. There it is mass-produced and

appears in the blood as a specific antibody.

B. *Clonal Selection*: This theory of Jerne's is not only inconsistent with developing knowledge of protein biosynthetic mechanisms, it also supposes a "homing" mechanism which is without support or precedent. It did, however, serve to suggest to Burnet an alternative explanation which retained the element of natural selection while dismissing in part the objectionable ideas of random gamma globulin manufacture and homing.

The heart of the clonal selection theory is the hypothesis that mesenchymal cells capable of antibody synthesis (plasma cell precursors) are constantly arising as a consequence of the continual cell division and differentiation going on in the reticuloendothelial system. These cells have a gene controlling gamma globulin synthesis and this gene determines the final shape and specificity of the antibody molecule. In addition, this gene is imagined to be hypermutable, i.e., it has a high rate of spontaneous random mutations. These give rise to a wide diversity of antibodies at random, a situation similar to that postulated by Jerne. The effect of antigen is to combine with the most complementary of these antibodies on the surface of the cell, much as depicted for the mechanism of immune paralysis. This combination now serves to do one of two things: It either stimulates the cell to divide and form a clone of similar cells, or it destroys the cell and prevents both antibody and clone formation. Clonal selection, therefore, can either call forth antibody production or selectively suppress it. Again, we have no idea of how these two diametrically opposed results are achieved.

VII. *Applications of Clonal Selection*: In order to examine critically the usefulness of the clonal selection theory, it might be worthwhile to summarize some of the material covered earlier and see how it fits in. The essential points are:

A. The entire antigenic spectrum is established individually for each organism. Self and not-self must be learned.

B. Inhibition, whether at low (tolerance) or high (paralysis) levels of antigen is transitory unless periodically reinforced.

C. Evidence from immune paralysis and tolerance suggests that antibody-forming

cells, once committed to the manufacture of a certain type of antibody, are frozen in this pattern and cannot form other antibodies.

D. There are two facets to the action of antigens upon antibody-forming cells: In proper concentration they stimulate antibody production, in high concentration they inhibit it. Both actions seem mediated through a direct action upon the cells.

E. The neonate is more sensitive to the inhibiting action of antigen than the adult; i.e., inhibition occurs at lower antigen levels.

F. Although there are differences between the immune systems of the newborn and adult, there are no sharp transition points between them. Immunological reactivity passes insensibly from one to the other as the individual ages.

G. On occasion, self components appear able to become antigenic and initiate immune reactions.

Here are seven items against which to test the clonal selection theory. How well does it measure up? Right at the beginning there are difficulties. One of the essential features of clonal selection is the hypermutability of the gamma globulin gene. Although there is ample precedent in biology for different mutation rates at different genetic loci, this has been entirely in microorganisms and there is no evidence for a parallel occurrence in man. Lederberg, however, supports it as a possibility¹⁸ and it will have to await the test of time.

If we accept hypermutability, then items (A), (B) and (C) immediately fall into line. With an infinite variety of mutant possibilities, those cells producing anti-self units must be weeded out in each individual (cf. A), not only as a neonate but recurrently through life as they randomly recur (cf. B). Also, following each mutation, the pattern of antibody produced would be frozen by the new genetic pattern (cf. C).

Items (D), (E) and (F) deal with things which cannot be reckoned for or against clonal selection. The facts of immune paralysis and tolerance exist, they must be accounted for by any theory, and this is achieved more nearly by clonal selection than by any alternative explanation. Somehow,

the contact of antigen with the cell making its homologous antibody can bring about either stimulation or suppression. There is a delicate balance between them which shifts with age. The mechanism is unknown and we must, for the present, leave the matter there.

Item (G) we have already discussed. As mentioned, the explanations given arose chiefly from the clonal selection theory and properly belong to it. We can say, therefore, that the clonal selection theory is at least compatible with this many immunological facts. There are many others which lay outside the scope of this review and these, too, seem compatible. Compatibility, of course, is not proof, but a theory as far reaching as this is not susceptible to a single broad proof. As each mechanism is explored and understood in greater detail, the theory will be refined to conform. Meanwhile, it provides a stimulus to investigation and a temporary roof for the house of immunology. □

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800 N.E. 13th Street, Oklahoma City, Oklahoma

ABSTRACTS

WHY IS CHLOROTHIAZIDE AN ANTIHYPERTENSIVE AGENT?

The benzothiazide diuretics (Diuril, et al.) have gained an important place in the ranks of drugs for the treatment of hypertension, yet the means by which they act has remained obscure. In an experiment designed to measure perfusion pressures within the renal vascular bed, Gillenwater and his associates prepared a circuit which took blood from the carotid artery of a dog, passed it through a constant-flow pump and into the abdominal aorta, where by means of clamps and ligatures, the entire flow was directed into the left renal artery.*

Isosmotic solutions of either sodium chloride or of chlorothiazide were then infused into the circuit and changes in perfusion pressures recorded when vasoconstricting or vasodilating agents were added to each.

The perfusion pressure was not affected by the addition of either the saline or the chlorothiazide solutions alone. The addition of *I*-epinephrine, levarterenol, or Val-5-angiotensin II produced much greater increases in pressure with saline than they did when added to the chlorothiazide infusion. Furthermore, the perfusion pressures were lower with infusions of chlorothiazide and magnesium chloride than they were with saline and magnesium chloride.

From this experiment it would seem that chlorothiazide does not reduce blood pressure by: 1) decreasing the plasma volume, 2) decreasing the total exchangeable sodium, or 3) diminishing the cardiac output.

REVIEWER'S NOTE: Just what meaning the results of this study have for the practicing clinician apart from exercising his curiosity, is probably highly variable. It suggests to this reviewer, however, that the next time he treats a patient with a myocardial infarction and congestive heart failure he will use a diuretic other than one of the benzothiazides. The concentration of chlorothiazide used in this study is proportionate to about one-fifth of that theoretically obtained from the average diuretic dose used in humans. He wouldn't want the thought of chlorothiazide inhibiting the vasopressor effects of Levophed should shock intervene. □

*Effect of Chlorothiazide on Response of Renal Vascular Bed to Vasoactive Substances. Jay Y. Gillenwater, Jerry B. Scott, and Edward D. Frohlich. *Circulation Research* 11: 283-286 (August) 1962.

AUTONOMIC NEUROPATHY IN DIABETES

Five physicians have joined to report their experiences with three diabetic patients who developed severe disturbances in autonomic nervous system function.* Despite meticulous care of the diabetes *per se* and the employment of the usual empirical treatment for the neurologic disorders, two of the patients became worse and the third achieved only a stand-off position with his afflictions.

The first patient, a 33-year-old salesman, had been known to have diabetes for five years when he first complained of paresthesias in the legs and feet. Rigid diabetic control and the administration of vitamin B₁₂

resulted in some improvement, but within three months he developed nausea and vomiting, and x-ray studies showed pyloric obstruction. Impotence was present, and a painless bladder distention to the level of the umbilicus necessitated the insertion of an indwelling catheter. Attempts to surgically correct and bypass the pyloric obstruction brought little relief, and his weight declined rapidly. Orthostatic hypotension added to the patient's difficulties.

The second patient had very labile diabetes and was subject to frequent episodes of hypoglycemia. His gastrointestinal symptoms were primarily those of diarrhea, but peripheral neuropathy was marked and involved both upper and lower extremities. He also had orthostatic hypotension, was impotent, and there was evidence of a neurogenic bladder.

The third patient had peripheral neuropathy initially, but within a year developed diarrhea, orthostatic hypotension, and a hypotonic bladder. Careful regulation of insulin dosage and diet resulted in some improvement.

REVIEWER'S NOTE: Although it has been known for many years that diabetic patients sometimes develop various neuropathies in association with their disease, the basic lesion and its pathogenesis are still largely unknown. This paper is a valuable contribution for the description of the tests made and the disorders of physiologic function found. Because these patients had such a variety of neurologic symptoms the practitioner, who like this reviewer) is accustomed to thinking of diabetic neuropathy as a pain in the leg, will find the case histories rewarding. Apart from careful management of the diabetes, treatment remains symptomatic and conjectural. □

*Physiologic Studies of Autonomic-Nervous-System Dysfunction Accompanying Diabetes Mellitus. E. Clinton Texter, Jr., Stuart H. Danovitch, W. James Kuhl, Wesley G. Tomhave, and Francis J. Haddy. *American Journal of Digestive Diseases* 7: 530-544 (June) 1962.

RECENT PUBLICATIONS FROM THE MEDICAL CENTER

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Reprints of the above publications are usually available on request from the senior author, c/o Mrs. Joan Campbell, Veterans Administration Hospital, 921 N.E. 13th Street, Oklahoma City, Oklahoma.

The OSMA and the State Legislature

The Oklahoma State Medical Association will be interested in a number of items to be considered by the 29th session of the state legislature, which convened in Oklahoma City on January 8th.

A new public health code, an appropriation of funds for the Medical Examiners Act, the creation of a medical advisory committee to the Department of Public Safety, a proposal for compulsory immunization of school children, appropriations for the medical school, and several modifications of the medical practice laws of Oklahoma will highlight the interest of the OSMA's State Legislative Committee, which is headed by Elmer Ridgeway, Jr., M.D., Oklahoma City.

As important as the medical bills might be to the profession, the legislators themselves will be concerned foremost with such problems as the relationship between a Republican governor and a Democratic legislature, the financing of state government without a tax increase, and the huge problem of reapportionment. It is expected that serious consideration of medical and other legislation may be delayed until the major political problems are thrashed out.

At any rate, here is the gist of medical legislation either pending or under consideration.

Public Health Code: Senate Bill 26

Pre-filed with the state senate, the recodification of Oklahoma's public health laws, S.B. 26, has already won approval of the Legislative Council's Public Health and Welfare Committee. It is 142 pages long, and provides for such changes as: The licensing, inspection and regulation of vending machines by the state health department; the licensing (\$25 fee) of pri-

vate laboratories providing premari-
tal and prenatal blood testing; the purchase of malpractice insurance for public health physicians and nurses; the licensing of mobile home parks and the regulation of health and sanitary conditions; the establishment of state control with respect to ionizing radiation; the extension of the "Good Samaritan Act" to cover physicians participating in research projects designed to improve public health, such as the activities of the OSMA's Perinatal Mortality Committee; the regulation of child day care establishments; and the creation of a "Hazardous Substances Labeling Act."

The Public Health and Welfare Committee has also approved, in principle, the development of air pollution legislation, but no specific bill has been agreed upon at this time.

Medical Examiners Act

A Board of Unexplained Deaths, and the provision for a state and county medical examiner system to investigate such deaths, was approved during the 28th session of the legislature. However, no appropriation was made for financing the measure.

In accordance with the express wish of the OSMA House of Delegates, efforts will be made by the State Legislative Committee to obtain funds for the proper operation of the law, and certain other modifications will be sought.

A specific bill has not been drafted as yet, but Senator Cleeta John Rogers, Oklahoma City, has agreed to assume responsibility for this project and to sponsor the legislation. Preliminary studies of the financial needs of the medical examiner system indicate that approximately \$200,000 a year would be the optimum

appropriation. However, due to the budgetary problem confronting the legislature, there will likely be a downward adjustment of the financial request before the final bill emerges from the drafting process.

During its first year of operation, the medical examiner system has been largely a volunteer effort with W. Floyd Keller, M.D., serving without compensation as State Medical Examiner, and F. R. Hassler, M.D. has served as his deputy under the same financial conditions. County examiners have been paid by county governments sporadically, or not at all, and the lack of funds, facilities and trained personnel has jeopardized the program from the beginning.

The proposal to be offered the legislature will, among other things, provide salaries for pathologists and other professional personnel, and will furnish compensation for county examiners directly from the State Board of Unexplained Deaths, rather than through county government. In addition, the requested appropriation will include funds for autopsies, purchase of equipment and supplies, and for the establishment and maintenance of a state office.

Driver's License Medical Advisory Committee

The OSMA Safety Committee, at the request of the Oklahoma Department of Public Safety, has favorably considered the establishment of a Driver's License Medical Advisory Committee, and will transmit a proposed bill to the State Legislative Committee with recommendation for action.

Under the terms of the bill, the committee will be comprised of the

State Commissioner of Health, the Director of Mental Health and Retardation, and a member of the Oklahoma State Medical Association, who shall be appointed by the governor from nominations made by the OSMA.

The committee will recommend standards for determining the physical, emotional and mental capacity of applicants for driver's licenses and holders of driver's licenses, and may recommend standards for rejection of the driving privilege.

Special medical examinations of drivers may be required by the committee, which shall be at the expense of the person whose driving ability is in question. The Commissioner of Public Safety shall give due consideration to the findings of the committee, which shall be used, together with other information such as the person's record of driving experience, in determining ability to operate a motor vehicle safely.

If the driver's license is revoked, and he appeals, the findings and recommendations of the committee are admissible as evidence.

In justifying the need for the legislation, the Department of Public Safety has said that it is now virtually impossible to revoke a license for health reasons, since the opinions of professional witnesses have been inadmissible in appellate courts.

Immunization of School Children

Another legislative item under consideration is compulsory immunization of school children, having been approved by the OSMA's Council on Public Health.

The language of the bill has not been drafted as yet, but it is expected to follow the pattern established in many other states. Provisions of the bill will include exemption for students on the basis of religious beliefs.

O.U. Medical Center

The financial problems of the University of Oklahoma Medical School were referred to the OSMA at a joint meeting on December 13th.

The school, with the support of the

Regents for Higher Education, is asking the legislature for an additional appropriation of \$635,000 per year for the teaching facility, and an annual increase of \$500,000 for the University Hospitals.

School officials say the state is only paying for about one-sixth of the school's operational expenses (4.5 million per year) at the present time, and most of the balance of the financing is being produced by the faculty through acquisition of grants. State support of the OU medical school and affiliated hospitals rates at the bottom of all state supported medical teaching institutions.

Medical Practice Laws

At its 1962 annual meeting, the OSMA House of Delegates approved four amendments to the medical practice laws of Oklahoma, which will now be submitted to the legislature by the State Board of Medical Examiners.

The present law authorizing a licensure renewal fee of \$5 per year, will be changed to provide a fee of up to \$10 per year, as determined necessary by the board. Increased operational costs beyond the control of the board are cited as reasons for needing increased revenue.

Another amendment will permit the Narcotic Enforcement Division of the Attorney General's Office to furnish state licensing boards with any information in its files. The purpose is to encourage the boards to attempt rehabilitation of potential narcotic offenders before the problem results in a conviction.

If the legislature grants another amendment being requested, the five year maximum for licensure probation will be eliminated, enabling the Board of Medical Examiners to set the limit of the probationary period above the one year minimum.

Practicing medicine without a license will be more strongly enforced by another proposal under consideration. The amendment specifies that a second offense is a felony, punishable by a fine of not less than \$1,000, or one year in the state penitentiary, or both. □

Disease Prevention Month Planned

April, 1963, will be designated "Disease Prevention Month" by the Oklahoma State Medical Association's Council on Public Health. But the council is having problems in getting the program off the ground.

Under the direction of council chairman Paul D. Erwin, M.D., the purpose of the campaign is to improve the level of immunization in Oklahoma for tetanus, whooping cough, diphtheria, smallpox and poliomyelitis. Promotional materials will stress the safety, efficacy and wisdom of widespread use of available vaccines, and a secondary theme will portray the physician's interest in *preventing* rather than *treating* disease.

The project was initiated by the OSMA House of Delegates last spring, when a Tulsa County resolution was approved calling for a continuing education program on the value of immunization in disease prevention.

Specific plans of the Council on Public Health are: (1) To initiate statewide press, radio and television publicity, urging Oklahomans to see their family physician and bring their immunization records up-to-date; (2) To provide speaker's kits for county medical societies and posters for all physicians' waiting rooms; (3) To distribute, through all physicians' offices, wallet-size shot record cards, as well as to furnish vaccination reminder cards for mailing to each doctor's patient list; and (4) To provide suggested advertisements for use of county medical societies in promoting local tie-ins to the state campaign.

County Help Needed

Doctor Erwin stressed the need for complete cooperation of county medical societies if the program is to succeed. "The OSMA can only do so much," he said, "and the project will falter if we don't get better response from the counties."

He explained that county society presidents were asked in November

to seek local approval of the program and transmit it to the Council on Public Health. "To date," he said, "not a single county society has answered."

Unless the counties register more enthusiasm, the "Disease Prevention Month" plans will necessarily have to be curtailed, perhaps limited to a generalized public information program emanating completely from OSMA headquarters.

"The public service and public relations values of the project are self-evident," Doctor Erwin added, "and we sincerely hope the county medical societies will help us reach our objectives by offering cooperation." □

OSMA To Begin Newspaper Column

"A Message From Your Doctor," the OSMA Council on Public Policy health column for weekly newspapers, will be sent to 234 papers on February 1st.

Part of the Council's effort to improve public relations, the column is aimed at providing authoritative health information to the public, with the by-product of creating goodwill for the Oklahoma State Medical Association, whose by-line the article will carry.

Newspaper editors will receive a new article each week, and will be furnished mat service for the masthead of the column as well as for occasional pictorial illustrations. To gain general acceptance of the column, the OSMA will follow up the direct mail solicitation of the editors, by contacting a physician in each community where a weekly paper is located, asking him to personally call on the editor. Also, it is planned to purchase advertising space in the Oklahoma Press Association's publication, *The Oklahoma Publisher*.

The project offers the OSMA a potential public relations exposure of approximately 350,000 person each week, the combined circulation of the

weeklies. However, Rex E. Kenyon, M.D., Council on Public Policy Chairman, said: "We'll be well pleased if we can get 50-75 papers carrying the column each week."

Current plans are to run the column for a six month's period, then evaluate its effectiveness in the light of deciding whether to establish it on a permanent basis. Doctor Kenyon and others who have investigated the public relations plan are optimistic that it will be widely accepted and read.

Imogene Patrick, former science writer for the Oklahoma Publishing Company, will write the articles on the basis of interviews with local physicians. However, no physician's names will be mentioned in the articles.

Mrs. Patrick is now preparing articles on: "The Vitamin Myth," "Rheumatic Fever," "Contact Lenses," "Improving a Teenage Diet," "The Common Cold," and "The Proper Use of Drugs." Other subjects are being selected, and physicians are being contacted to provide technical information. □

1963 OSMA Dues

County medical society secretaries are now collecting 1963 county, state and national medical association dues.

OSMA dues remain unchanged at \$47 per year for each active member. The dues of the American Medical Association are \$45 for 1963, up \$10 from last year. Thus, state and national dues are \$92 for the year, to which must be added the local county society dues.

Physicians are urged to pay their dues to the county secretary as soon as possible after the January 1st due date. OSMA members will become delinquent after March 31, 1963.

**Report Officers,
Committees Delegates**

Another responsibility of the county medical society secretary is to promptly report his group's 1963 slate of officers, delegates and com-

mittee chairman. Each secretary has been contacted for this information, and followup letters have been sent to those not responding.

The prompt reporting of officers and committee chairmen is essential to the continuity of organized medicine's activities. It is of particular concern to the Speaker of the House of Delegates that he quickly learn the composition of the House for 1963.

In preparing for the annual meeting of the House of Delegates, scheduled for May 3rd in Tulsa's Mayo Hotel, Speaker Marshall O. Hart, M.D., needs the roster of certified delegates and alternates from which to select committee personnel for the planning and conduct of the meeting. Also, it is planned that the Speaker will forward information regarding the meeting to all delegates before May. □

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Ban Lifted on Type III Polio Vaccine

Communities planning immunization campaigns against poliomyelitis are urged to move ahead, using all three types of Sabin oral vaccine with particular emphasis on children and young adults, Surgeon General Luther L. Terry of the Public Health Service announced today.

Doctor Terry said that this is the recommendation of the Surgeon General's Special Advisory Committee on Oral Poliomyelitis Vaccine which concluded its fifth meeting this year on December 18, and that he has accepted the Committee's recommendations.

The Committee stressed that special attention be given to children because they comprise the population group "in whom the danger of naturally occurring poliomyelitis is greatest and who serve as the natural source of poliomyelitis infection in the community."

"The Committee feels and I wholeheartedly agree that of greatest importance is planning for the continuing vaccination of oncoming generations," the Surgeon General said. "This is the only way we will succeed in eradicating polio permanently."

The Surgeon General quoted the recommendation of the Committee with respect to vaccinations among adults:

"Because the need for immunization diminishes with advancing age and because potential risks of vaccine are believed by some to exist in adults, especially above the age of 30, vaccination should be used for adults only with the full recognition of its very small risk. Vaccination is espe-

cially recommended for those adults who are at higher risk of naturally occurring disease; for example, parents of young children, pregnant women, persons in epidemic situations and those planning foreign travel."

Doctor Terry presided at the two-day meeting at which the Special Advisory Committee on Oral Polio Myelitis Vaccine reviewed all cases of suspected polio-like illness.

In reviewing all cases of polio-like illnesses currently known to have been associated with the administration of oral polio virus vaccine of all three types in non-epidemic areas, the advisory committee attempted to decide whether each of the cases were "compatible" with the possibility of having been induced by the vaccine.

"Compatibility" was judged when three criteria were met: (1) onset within a period (4-30 days after feeding) consistent with a reasonable incubation period; (2) an illness clinically consistent with paralytic polio; and (3) laboratory findings which do not exclude a vaccine relationship.

Type III: Eleven Cases

On the basis of data now available, the total number of cases associated in time with the direct administration of Type III vaccine and considered by a committee majority as "compatible" is now 11, of which 8 are over 30 years of age. Four cases were excluded as clearly unrelated to Type III vaccination; and seven cases were considered inconclusive as to a possible vaccine relationship.

The total number of cases associated with the administration of Type I vaccine, and considered as "compatible" is seven, of which four are over

30 years of age. Ten cases were excluded; six were considered inconclusive. None of the three Type II associated cases was judged to be "compatible."

Low Risk

It should be noted that the total number of doses of oral vaccine given in non-epidemic areas during 1962 is approximately 31 million Type I, 19 million Type II and 15 million Type III. Hence, the maximum potential risk for Types I and III is of the order of one per million or less overall, but higher for those over 30 years of age. For Type II there is still no indication of risk.

"In the oral and the Salk vaccines we have two established weapons against polio and we can, I believe, look forward to the day when polio is finally eliminated in this country," the Surgeon General stated. "With a total of around 650 cases reported this year, compared to almost 58,000 a decade ago, it is clear we are well on our way."

In commenting on the work of his Advisory Committee, Dr. Terry said: "The meticulous care with which members of this Committee — all experts in the scientific disciplines involved in the use of vaccines — have watched and evaluated developments in the widespread use of oral poliomyelitis vaccines is exemplary," the Surgeon General said. "They are rendering an invaluable service in advising us."

Members of the Surgeon General's Committee are: Doctor David Bodian, The Johns Hopkins School of Medicine; Doctor John Fox, Public Health Research Institute of the City of New York; Doctor Archie L. Gray, Secretary and Executive Officer, Mississippi State Board of Health; Doctor

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1963 Annual Meeting

Twelve nationally known medical personalities have accepted invitations to appear on the scientific program of the 57th Annual Meeting of the Oklahoma State Medical Association in Tulsa, May 3-5, 1963, it was announced last month by Doctor Donald L. Brawner, General Chairman.

They are: William W. Scott, M.D., Professor of Urology, Johns Hopkins University School of Medicine, Baltimore, Maryland; James O. Elam, M.D., Associate Professor of Anesthesiology, University of Buffalo School of Medicine, Buffalo, New York; Robert B. Greenblatt, M.D., Professor of Endocrinology, Medical College of Georgia, Augusta, Georgia; John M. Knox, M.D., Associate Professor of Dermatology, Baylor University College of Medicine, Houston, Texas; Herman K. Hellerstein, M.D., Assistant Professor of Medicine, Western Reserve University School of Medicine, Cleveland, Ohio; James T. Grace, M.D., Assistant Professor of Surgery, University of Buffalo School of Medicine, Buffalo, New York.

William J. McGanity, M.D., Chairman of the Department of Obstetrics and Gynecology, University of Texas School of Medicine, Galveston, Texas; John H. Moe, M.D., Chairman of the

Department of Orthopaedic Surgery, University of Minnesota School of Medicine, Minneapolis, Minnesota; Lloyd M. Nyhus, M.D., Associate Professor of Surgery, University of Washington School of Medicine, Seattle, Washington; Theodore C. Panos, M.D., Chairman of the Department of Pediatrics, University of Arkansas School of Medicine, Little Rock, Arkansas; Norman Simon, M.D., Consultant to the Institute of Nuclear Studies, and Attending Radiologist, Mount Sinai Hospital, New York, N.Y.; and, J. T. MacDougall, M.D., Professor of Surgery, University of Manitoba Faculty of Medicine, Winnipeg, Manitoba.

Several additional guest speakers will be announced later, Doctor Brawner said.

Special features of the 1963 Annual Meeting will include a repeat performance of the popular Fireside Conferences, to be held on Friday, May 3, under the sponsorship of the Oklahoma Chapter of the American College of Chest Physicians; an Americanism Forum on economic and social aspects of medicine and government; a Symposium on the Management of Disabling Pain of Non-Articular Rheumatic Origin; and selected scientific exhibits.

The President's Inaugural Dinner Dance will be an event of Saturday evening, May 4, with ceremonies marking the inauguration of Doctor Peter E. Russo, Oklahoma City, as President of the Oklahoma State Medical Association.

A limited number of commercial exhibit booths are for sale, and interested exhibitors are urged to contact Mr. Jack Spears, Convention Manager, B9 Medical Arts Building, Tulsa.

Members of the Association may make reservations directly by writing to The Mayo, 5th and Cheyenne Streets, Tulsa. Please specify dates of arrival and departure and types of accommodations desired.

The Board of Trustees will meet on Thursday, May 2, and the annual meeting of the OSMA House of Delegates is scheduled for Friday, May 3. □

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TV Panel Started

To begin the new year with an accelerated public relations program the Oklahoma County Medical Society has announced plans for a series of ten panel discussions over WKY-TV.

The health education program, "Medicine and You," is co-sponsored by the Community Workshop of Oklahoma City Public Libraries. Since the two groups have worked together for nine years in presenting such programs in the library auditorium, the manner of presentation — live television — is the significant change in 1963 plans.

Programs on "Cancer" and "Life After Forty" were presented over television on January 6 and 13 by panels of Oklahoma County physicians. Subsequent topics to be discussed are: January 20th — "Surgery"; February 3rd — "Tensions and Mental Health"; February 10th — "Child Health"; February 17th — "Your Family Doctor"; February 24th — "Physical Conditioning"; March 10th — "Open Heart Surgery"; March 17th — "Arthritis and Rheumatism"; and, March 24th — "Accidents."

Chairman of the forum committee is Doctor E. E. Shircliff, Oklahoma City. Doctor W. Julien Bahr, Oklahoma City, will moderate the series.

OSMA Project

The Council on Public Policy of the Oklahoma State Medical Association originally planned a similar television project, but stepped out when Oklahoma County's Public Relations Committee volunteered to be responsible for the activity.

Within a few days after a joint meeting between representatives of the two groups, Oklahoma County Medical Society had arranged for once-a-week appearances by physicians on the noontime Tom Paxton Show (WKY-TV). The development of the "Medicine and You" series followed the highly successful guest appearance program.

Since its 1962 Conference of County Medical Society Officers on October

Cities Warned Against Glass Door Hazard

Sliding glass doors in homes are rapidly proving to be a source of extreme danger to children and adults. National statistics and case history reports clearly relate that hundreds of children have been severely injured as a result of bumping against or running through sliding glass doors.

No one knows how many unnecessary deaths occur in the United States, or how many individuals are permanently disfigured as a result of walking into large panes of glass. The National Safety Council has been unable to assemble reliable statistics, but has officially recognized the problem.

Seattle, Washington recognized the growing danger in 1961. In July, 1961, a Seattle teenage girl lost her life after a fragment from such a door severed her femoral artery and vein. This tragedy duplicated one of a year previous when a young man suffered a nearly identical injury and died. With a total of ninety victims of glass door accidents reported in eleven months in King County, Washington, the building code was changed to require a nominal thickness of one-quarter inch of approved-type wire reinforced, tempered or laminated safety glass.

A number of cities have since modified or changed their building codes.

What is the condition in Oklahoma? The OSMA Safety Committee, chaired by Lynn H. Harrison, M.D., feels the panoramic glass door that characterize architecture's modern "Bright Outlook" is now presenting a gloomy picture.

"Three or four years ago," according to Doctor Harrison, "large doors that opened onto a patio or yard were

of heavy shatterproof glass and installed only in homes with a price tag of \$50,000 or more. But today, the doors are so popular that few new homes are without one. Unfortunately, the quality of glass has decreased more than price. The cheaper glass is often so thin and flimsy that it shatters from a relatively light blow, thus, creating an unwarranted and unnecessary health hazard."

Last year in Oklahoma City, the son of a resident physician died as a result of a sliding glass door accident. In Oklahoma City, one plastic surgeon reported seven children and three adults treated for injuries sustained by glass doors in the past year; an Oklahoma City pediatrician treated three children with similar injuries.

Oklahoma's problem, as well as the nation's, will be improved on April 1, 1963, when the recent FHA and VA regulation changes are effective. These changes require that all residential construction financed under FHA and VA regulations be equipped with safety glass (laminated, shatterproof, or wire mesh) in sliding glass doors, shower stalls, swinging doors, and glass dividers from the floor level up.

Since conventionally financed homes will not be effected by these regulations, the OSMA Safety Committee intends to pursue the issue hoping that Oklahoma cities will modify their building codes to require conventional homes be equipped with safety glass.

"The Safety Committee has gathered considerable statistics and case history reports," said Doctor Harrison. "We intend to continue gathering glass accident information as well as to prepare an article to appear the latter part of January in the new OSMA health column which will be circulated to 234 state newspapers."

The Safety Committee extends to all county medical societies an invitation to cooperate in this accident prevention measure.

A press release is being prepared which will be forwarded with a letter

of transmittal to all county society presidents. The committee urges all county societies to run the press release locally and push for re-codification of community building codes in an effort to prevent sliding glass door accidents. Moreover, all physicians throughout the state are urged to report sliding glass door accidents to the OSMA executive office. This information will be filed with other statistical reports.

"There are a few accidents occurring in the home that can't be prevented," Doctor Harrison stated, "but here's one we can do something about before any more unnecessary accidents are caused as a result of sliding glass door hazards."

BOOK REVIEW

VIRUSES AND THE NATURE OF LIFE, Wendell M. Stanley and Evans G. Valens, E. P. Dutton & Co., Inc., New York 10, New York, 1961, pp. 224, \$4.95.

This short (223 pages) and well-illustrated book will appeal to non-specialists. Even the virologist might enjoy having another look at familiar topics treated in the manner of the widely accepted *Scientific American* articles. This book, in fact, was generated in a series of eight television films offered by the University of California through San Francisco station KQED.

The reader will obtain a clear picture of what a virus is and how it interacts with living cells, for example, in cancer. More important, perhaps, is the relation between the demonstrated activities of viruses and the more esoteric functions of the cellular nucleic acids. Skillfully, the authors bridge the gap between the acceptable, even popular, virus and the forbidden, chemical, presumably academic realm of deoxyribonucleic and ribonucleic acids. As the title of the book suggests, its real purpose is to use viruses to help explain the higher orders of life. Without actually trying to make DNA and RNA household abbreviations, the

FOR SALE: General practice office, fully equipped. One partner taking further training, the other retiring. Contact Agnew A. Walker, M.D., Wewoka, Okla.

WANTED: Internist, Ophthalmologist, Ob-Gyn, Urologist, board qualified or certified for practice with group in Western Oklahoma. One month annual vacation. Progressive pay scale. Contact Arthur Grayson, M.D., Medical Director, Community Hospital-Clinic, Elk City, Oklahoma.

G.P., 17 YEARS experience, with some training and special interest in surgery, desires to quit solo work and unite with associate or small group. Contact Key A, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

PHYSICIAN, presently interning, desires Oklahoma location to establish private practice. Contact Earl B. Gehrt, M.D., Broadlawns Polk County Hospital, 18th and Hickman Road, Des Moines, Iowa.

WANTED medical doctor, fine opportunity for general practice in central Oklahoma town, 10,000 population in Tulsa area. Near lake, new hospital, new nursing home. Contact Key C, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

BOARD ELIGIBLE pediatrician, native Oklahoman, desires practice opportunity in state; available September 1, 1963. Contact J. P. Reimer, M.D., 4245 Mountain Village, Mountain Home AFB, Idaho.

CLINIC BUILDING, equipment and practice available for general practitioner in Okemah, Oklahoma. Father of deceased physician desires to make arrangement with interested party. Contact Oscar V. Rose, Box 5630, Midwest City, Oklahoma.

TINKER AFB, Oklahoma, has vacancies for two Medical Officers, GS-13, \$12,245 per annum. These positions are in the Occupational Health and Medicine field and are strictly day shift, 40 hours per week, with no night calls. Doctors may continue private practice during off-duty hours as long as it does not interfere with their attendance and performance of duties at the base. They may not accept or continue employment resulting in payment from the City, County, State, or other Federal Agencies due to dual compensation laws. Interested general practice, as well as Occupational Health physicians, should contact Tinker AFB, Telephone PE 2-7321, Ext. 2691, for qualification requirements and other detailed information concerning these positions.

WATONGA CLINIC, Watonga, Oklahoma (population 3,500) wants to add general practitioner to present four-physician group. Clinic building less than four years old. Guaranteed salary first year, with subsequent option to become partner. Cattle, agricultural economy. Large trade territory. Contact A. K. Cox, M.D.

authors have successfully met their purpose with another contribution to the growing feeling that scientists must learn to speak about ever more complicated matters to ever more interested laymen.

Doctor Stanley is Director of the Virus Laboratory at Berkeley and a 1935 Nobel laureate for his isolation and crystallization of the tobacco

mosaic virus. He and his co-author, a television producer, were assisted in the writing of this book by six members of the Virus Laboratory Senior Staff.

Viruses and the Nature of Life was presented to the Medical Center Library by Doctor Harold Muchmore in memory of his parents.—John W. Kelly, Ph.D. □

Continuing Education

THIS ISSUE of the *Journal* is noteworthy for two reasons: First, the scientific section is devoted to papers on various aspects of that ubiquitous disease, hypertension. Second, all the authors of these papers are members of the Faculty of the University of Oklahoma School of Medicine, full-time or part-time.

These papers represent only a small part of the tremendous progress in study and teaching being made at our medical school through the enthusiasm and cooperative spirit of every faculty member.

Not all medical schools are blessed with so many physicians with such divergent interests who work together so well for the good of everyone. Much of the credit for this worthwhile, very welcome, healthy spirit of mutual service is due Dean Mark Everett whose wisdom and energy have served as a catalyst to the rapid development at the medical school where a practical balance between research and service to the medical community has been achieved.

Most Oklahoma doctors receive their medical training at the University of Oklahoma and through post-graduate courses, research, contributions to the *Journal* and other media the Medical Center provides a continuing source of education for everyone who wishes to keep abreast of the times.

A primary function of the Medical Center is to train doctors at either the undergraduate or graduate level. The basic mission of private physicians is to treat the sick. There is a tendency for each of these interdependent groups to band together at a superficial level where apparent differences of purpose are exaggerated into bones of contention. A house, or a medical society cannot stand when divided against itself. The time which should be spent in the conquest of disease is squandered on intramural bickering.

This issue of the *Journal* as well as many preceding it and many yet to come

is a joint product of doctors some of whom are primarily teachers while others are engaged primarily in private practice. The combination is good, the cooperative enterprise is excellent and the results are outstanding. □

Survey of Medical Association Dues

WITH TIME FOR payment of annual dues to the Association again at hand it is believed that many questions may well be answered by a run-down on dues assessed by neighboring state organizations.

The 1963 dues for State Medical Associations in states bordering Oklahoma have been determined by direct correspondence with the Executive Secretaries of these Associations with the following figures submitted:

Arkansas	\$45.00
Kansas	50.00
Louisiana	50.00
Missouri	42.50
New Mexico	92.50
Oklahoma	47.00
Texas	45.00

These data indicate Oklahoma's dues as below the average for the states listed, \$47.00 as against an average of \$53.10. Or if the high New Mexico figure is discarded the Oklahoma dues fall practically on the median of \$46.58. It must be remembered that the Oklahoma dues were increased \$5.00 per member per year only last year in order to finance a Scholarship and Loan Fund for students at the University of Oklahoma School of Medicine.

Physicians are to be reminded again that they are usually billed by their County Medical Society for combined County, State and American Medical Association dues at one time. The County dues are retained by the local Society and the remainder sent on to the State. Here a further division occurs in that the Oklahoma State Medical Association retains \$47.00 and sends \$45.00 on

to AMA headquarters for each member, to pay his annual dues to the parent organization.

The dues levied by County Medical Societies over the State of Oklahoma vary greatly, as the following figures for annual dues for 1963 indicate:

Tulsa County	\$68.00
Oklahoma (Oklahoma City)	33.00
Washington-Nowata (Bartlesville)	33.00
Comanche-Cotton (Lawton)	38.00
East Central (Muskogee)	22.00
Garfield-Kingfisher (Enid)	23.00
Custer (Clinton)	10.50

On the basis of these figures then, a Tulsa physician would be billed:

County dues	\$68.00
State dues	47.00
AMA dues	45.00

TOTAL \$160.00

whereas a Custer county physician's total would be \$102.50 on the same computation, with the lesser total being based on the lesser County dues.

Oklahoma is one of only 13 states in which membership in the AMA is made mandatory by the State Medical Association. These states are as follows:

Arizona	Kansas	Nevada
California	Mississippi	New York
Colorado	Montana	Oklahoma
Hawaii	Nebraska	Wisconsin
Illinois		

New York physicians voted only last year to make AMA membership required for membership in the New York State Medical Society.

Although belonging to the AMA is purely elective by the individual physician in the remaining 37 states the overwhelming majority does belong, as evidenced by the total AMA membership of more than 180,000.

The organizational structure of the AMA and its component societies as compared to other professional organizations such as The American Bar Association will be the subject of a forthcoming article.—*Walter E. Brown, M.D.* □

A New Look at An Old Disease: Pyelonephritis

THE STUDY of pyelonephritis has received a real stimulus recently with the introduction of the quantitative urine culture, and the recognition of the chronic form of this disease as the commonest cause of uremia. Next to the group of lower respiratory tract infections, pyelonephritis is the commonest bacterial infection encountered in clinical medicine. It would seem therefore that the current emphasis on the detection and treatment of this disorder is entirely appropriate.

However it is striking that despite accurate identification of the causative organisms investigators persist in talking about pyelonephritis in terms of its natural history, pathogenesis and response to treatment without regard to whether the causative agent is an *E. coli*, a *Pseudomonas*, *Proteus*, or *Aerobacter-Klebsiella* organism. It is true that most such studies deal with gram-negative rod infections, but a fair number include enterococci, staphylococci and streptococci as well. Certainly no responsible investigator today would presume to discuss the natural history and progress of "the bacterial pneumonias" without regard to whether the causative organism were a pneumococcus, staphylococcus, streptococcus or an *Aerobacter-Klebsiella*. The incidence of complications such as abscess formation, empyema, and pneumothorax are definitely different depending on which agent is responsible for the infection. Similarly, the course and prognosis of "the bacterial meningitides" is recognized to differ according to whether the pneumococcus or the meningococcus or the *Aerobacter-Klebsiella* organisms are the infecting agents.

It must be admitted that there is as yet no direct evidence that the bacterial pyelonephritides due to the various gram-negative rods do behave differently (this may well be because such evidence has never been looked for), but the pattern that has been learned in bacterial infections in other organs of the body would seem to suggest that the burden of proof is on the investigator who assumes that the bacterial pyelonephritides can be lumped together with respect to analyses of the natural history of this very important

and common disease. It should not be too long before data is available to establish whether instead of concerning ourselves with the patient with chronic pyelonephritis, we would do better to address ourselves to the problem of treating the patient with chronic pyelonephritis due to pseudomonas, which may be quite different in approach from the problem of the patient with chronic pyelonephritis due to E. coli (although the same antibiotic might be indicated in each.)—*John P. Colmore, M.D.* □

Medical Citizenship

RECENT YEARS have seen growing numbers of physicians emerge from their medical environs and take active interest in the affairs of government at all levels. They are seeking to achieve representation for their political philosophies.

If done with sound judgment and good taste, the emergence of the physician into the political arena is to be encouraged. Good citizenship is a responsibility which has been defaulted too long by too many.

While our external citizenship activities are on the upswing, it's paradoxical that there seems to be declining interest in the internal politics of organized medicine. For example, many important matters are under consideration by the House of Delegates of the AMA, as evidenced by the report on page 76 of this *Journal*. Yet few Oklahoma physicians keep abreast of the evolutionary changes affecting the profession, and the OSMA's delegation to the AMA House of Delegates is handicapped by our silence.

For a relatively small state society, we command great strength and respect at the national level, due to the abilities and reputations of our AMA Delegates, Doctors Wilkie D. Hoover and Malcom E. Phelps. Our Alternate Delegates, Doctors Tom C. Points and Francis A. Davis are effective, energetic lobbyists.

The delegation has done a splendid job of informing us of the issues at stake at the national level. Let us inform them of our position on these issues, by carefully appraising the subject matter, and by reaching a consensus opinion at our own House of Delegates meeting on May 3, 1963. □

Immunization

Editor
Journal of the
Oklahoma State Medical Association
P.O. Box 9696
Oklahoma City, Oklahoma

Dear Sir:

A recent editorial in this *Journal* (October, 1962) concerning mass immunization seemed to question the efficacy of immunization programs and to imply that certain of these vaccines are unsafe to use.

It is certainly true that both the morbidity and mortality from infectious diseases in the United States have decreased markedly over the past few years, but certain of these diseases are preventable with adequate immunization and any morbidity or mortality from *these* diseases is excessive and unnecessary.

The efficacy of these vaccines has been proven by field trials and experience with them. It is true that some reactions do occur to the vaccines mentioned, but when used as recommended by the "Academy of Pediatrics" the reactions are usually not severe and certainly pose a smaller risk than the diseases themselves.

The method for reaching the largest segment of the population with these vaccines may well be a subject for debate but the need for immunization is not.

Sincerely,
John E. Ward, M.D.
Resident, Preventive Medicine
and Public Health
University of Oklahoma Medical
Center

TABLE I				
DISEASE		1959	1960	1961
Diphtheria	Morbidity	934	918	617
	Mortality	72	69	?
Pertussis	Morbidity	40,005	14,809	11,468
	Mortality	269	118	?
Polio	Morbidity	8,425	3,190	1,312
	Mortality	454	230	?
Tetanus	Morbidity	445	368	379
	Mortality	283	231	?

Figures from the Morbidity and Mortality Weekly Report, October 21, 1962, U.S. Department of Health, Edu-

cation, Welfare, and Public Health Service Communicable Disease Center, Atlanta 22, Georgia.

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The Physician in Court; A Point of Ethics

MOST PHYSICIANS, at one time or another, are called upon to appear in court to testify as an expert witness. It may be in the Industrial Court of Workman's Compensation or in the Court of Common Justice for testimony in a claim of personal injury. In either instance it is a civic obligation of medical practice which can be forced upon the physician through the process of subpoena, if necessary. Medical ethics is not a legal consideration except that the medical expert is trusted and depended upon for accurate, sincere, intelligent and impartial testimony.

There are always two sides to a law suit so that the physician, as an expert witness, will be on one side or the other and he can expect to be paid for his services. Such a situation often gives rise to a minor or major partiality toward the side in which he is engaged. Perhaps this is humanly natural and not beyond the reasonable bounds of medical ethics. However, when it becomes obvious that the opinions of the physician are always more or less out of line in favor of whichever side he is on, it is a reflection on the integrity of the medical profession as a whole and, if possible, something should be done about it.

Unfortunately, under the rules of the court, the opinion of one medical expert

witness is honored equally with those of other medical expert witnesses so long as each is fully qualified under state laws and licensed to practice medicine. This makes it possible for one who is incompetent as a specialist to render an opinion in court with equal authority as one who is outstandingly competent in his field of medical practice. The lawyer in his enthusiasm to win his case is very likely to seek testimony in his favor. The judge is quick to recognize and deplore the obviously biased opinion of a popular expert medical witness, but the jury may not, with the result that justice fails to prevail. In the Industrial Court medical opinions are often so far apart in their evaluation of a disability that the judges can do no more than add the percentage ratings and take an average for the per cent of permanent disability.

Such a system breeds medical dishonesty and a disregard of medical ethics. It implies the ugly influence of the dollar on altering the truth. It is interesting to note that the physician in this category is careful enough to observe the rules of ethics in his medical practice so that the board of censors would have no grounds to bring charges against him. He loses the respect of his colleagues but retains his popularity as a medical expert witness. The exaggerator or the outright malingerer continues to gain an unjust award. The courts and other interested parties criticize the medical profession and many physicians would like to correct the situation but have found no way to do so.

How long will it be until lawyers, as well as physicians, recognize that such a situation is a detriment to both professions? A way should be found to establish special qualifications for a physician to testify as an expert witness somewhat as he is qualified by the boards in his field of medical practice. Then, instead of using the system of cross examination to impress a non-medical jury with technical medical testimony and opinion, hold a panel conference of physicians and lawyers, with the judge in his chambers. Opinions would still differ but more likely they would be honest, sincere and authoritative. □



When the death knell of democratic medical practice is sounded, the doctors will in a large measure be responsible. That we are casting our lots in this direction is reprehensible, yet not entirely irreversible.

Our vast specialization makes acquisition of medical services unnecessarily cumbersome, confusing and costly.

All patients seeking a diagnostic work-up should first be examined by a clinician versed in all facts of human frailties such as the internist, family physician or general practitioner. After his examination the patient is sent to the specialist in whose field the malady's remedy rests.

Reference of a patient through a series of specialists without general basic diagnostic work-up requires voluminous laboratory procedures, often repetitious; delays because of appointment schedules; patient bewilderment due to lack of correlation; and, patients necessary expenditure of excessive time and money.

As a result, the once idolized and eulogized American doctor has lost the prestige and esteem once bestowed upon him by a loving people.

Now, because of over-specialization, lack of consideration for patients, charges in excess of the patient's capacity to pay and loss of that close individual and family contact between patients and their personal physicians, there has been a great change of attitude the public now feels for doctors. They are, in a large measure, ready to relegate medical services into governmental departments or bureaus for regulation and control.

Are you one who has helped to cause this attitude change and these impending regulatory controls on your profession?

Stop and analyze the part you have played in this transition. Do your gratifications justify the extremes? There is a true means by which we may return to our former status. *First* we must recognize the roles we have assumed in precipitating this debacle; and, then proceed with dispatch to putting our houses in order.

It is imperative that medical students and young doctors in postgraduate training be led to understand that their only salvation is preparing themselves and dedicating themselves to patient consideration and to the role of a family doctor.

Respectfully yours,

J. Hoyle Carlock, M.D.

A Cardiologist Looks at Hypertension

SAM N. MUSALLAM, M.D.

TRUE HYPERTENSION, which implies persistent elevation of diastolic, as well as systolic blood pressure, is one of the most common clinical signs of disease involving the cardiovascular system. In the United States at least 50 per cent of persons over 50 years of age, according to Goldblatt, have hypertension of various origin. Hypertension is of great social and economic significance, and directly or indirectly plays a part in at least 25 per cent of all deaths in persons over 50 years of age.¹⁰

When confronted with a patient who presents himself with high blood pressure, a clinician asks himself a number of pertinent questions related to this problem: What is hypertension and how high should the blood pressure be to be labeled hypertension? Is this patient in question a hypertensive and are his symptoms caused by this disease? Is there a cause for his hypertension and is it a "curable form?" How severe is this disease and is therapy indicated? What is the prognosis of this particular type of hypertension with or without therapy? Can we improve the prognosis or possibly prevent complications by proper therapy? These and many similar questions, I am sure, knock and keep knocking at the physician's mind. To answer each question in detail needs, if you please,

a textbook. I shall, however, endeavor to answer some of these questions from the point of view of a clinician, being forced to avoid detailed physiopathological discussions, experimental hypertension, pharmacology of drugs, hemodynamics of hypertension, and so forth, urging those who are interested to refer to the extensive and excellent work on the subject.

So many factors influence blood pressure that the patient with elevated blood pressure readings must be evaluated to determine whether he has a hypertensive disease or a transient, unimportant rise in blood pressure due to some of these factors. Intermittent diastolic hypertension may be encountered in emotional stress and anxiety where there is no evidence of disease. Still, intermittent hypertension may be a part of hypertensive disease, the forerunner of persistent changes, and the earliest manifestations of developing hypertensive disease. Life insurance statistics show that even those patients with "high normal" levels are more prone to vascular disease than those with "low normal" levels.¹²

Blood pressure varies with age and sex. And, even though it is widely accepted that the upper limit of normal is 150 mms. of mercury for the systolic and 90 mms. for the diastolic, this dividing line cannot be considered as valid by many. Table 1 gives the figures advocated by Master *et al.*¹⁷

May I warn that it is not only unfair, but also both cruel and harmful to put the stigma of hypertension on an individual

Table 1
 SYSTOLIC AND DIASTOLIC PRESSURE READINGS
 BY SEX AND AGE

Sex and age	Systolic			Diastolic		
	Mean	Standard deviation	Coefficient of variation	Mean	Standard deviation	Coefficient of variation
Males:						
16	118.4	12.17	10.28	72.9	10.33	14.17
17	121.0	12.88	10.64	74.4	9.36	12.58
18	119.8	11.95	9.97	74.4	10.03	13.48
19	121.8	14.99	12.31	74.6	10.29	13.79
20-24	122.9	13.74	11.18	76.0	9.93	13.07
25-29	125.1	12.58	10.06	77.8	8.98	11.54
30-34	126.1	13.61	10.79	78.5	9.68	12.33
35-39	127.1	14.20	11.17	80.4	10.42	12.96
40-44	129.0	15.07	11.68	81.2	9.53	11.74
45-49	130.0	16.93	13.02	82.0	10.81	13.18
50-54	134.5	19.21	14.28	83.4	11.31	13.56
55-59	137.8	18.80	13.64	84.0	11.40	13.57
60-64	141.8	21.11	14.89	84.5	12.36	14.63
Females:						
16	116.1	12.10	10.42	72.3	9.55	13.21
17	116.0	11.51	9.92	72.0	9.16	12.72
18	116.3	11.42	9.82	71.8	8.60	11.98
19	115.1	11.87	10.31	71.1	8.93	12.56
20-24	115.7	11.83	10.22	71.7	9.67	13.49
25-29	116.8	11.43	9.79	73.7	9.05	12.28
30-34	119.8	13.97	11.66	74.9	10.78	14.39
35-39	123.9	13.85	11.18	78.0	10.01	12.83
40-44	127.0	17.07	13.44	79.5	10.60	13.33
45-49	130.6	19.47	14.91	81.5	11.63	14.27
50-54	137.3	21.29	15.51	83.5	12.36	14.80
55-59	138.5	21.40	15.45	83.5	11.72	14.04
60-64	144.0	22.33	15.51	85.0	12.95	15.24

Source: Master et al.

from one hasty blood pressure determination. Whenever hypertension is suspected, it is imperative to obtain a basal blood pressure reading. This may be done in one of four ways¹¹: 1. Have frequent blood pressure recordings made whenever the patient comes to the office—never depending on a single reading, but obtaining a succession of values each time; 2. Take the patient's blood pressure repeatedly over a period of 15 to 20 minutes; the monotony of this procedure soon causes the patient to relax and a more accurate basal blood pressure reading is finally obtained — this is known as the Horace Smirk method; 3. Visit the patient early in the morning, and record the basal blood pressure on awakening after he has had a good night's sleep, and 4. Have the blood pressure recorded every two hours during the night when the patient, moderately sedated, is assured a good night's sleep.¹¹

Having established that hypertension exists we then attempt to classify the type and severity, and if possible, discover an underlying cause. Several classifications of persistent hypertensive states exist, namely essential and secondary, specific or non-specific, medical or surgical, etc. Probably the classification given by Hollander, table 2, is as complete a classification as possible. Clinically, according to Sodeman, at least 90 per cent of the hypertensive patients are not in a known secondary group and fall into an unknown primary or essential group.²⁵

Essential hypertension has been divided into benign and malignant phases. The benign phase denotes a "persistently elevated blood pressure of unknown origin not accompanied by significant renal excretory functional disturbance." The malignant phase of essential hypertension, as defined by the Medical Advisory Board of the Council for High Blood Pressure of the American Heart Association reads as follows: "A clinical phase, rarely occurring *de novo*, more often appearing after a primary or secondary hypertension, characterized by diastolic hypertension and by accelerated and progressive renal damage, usually (but not necessarily) accompanied by papilledema, often by retinal hemorrhages and exudates and giving rise to death from uremia, unless the course is terminated along the way by complicating brain or heart damage."¹⁰

HISTORY

A detailed history is indispensable and oftentimes very rewarding. Essential hypertension, found in about 90 per cent of patients with diastolic hypertension, is usually associated with the history of hypertension in parents, aunts, uncles, or siblings. A history of kidney disease or predisposing factors tend to point to a renal cause of hypertension. The sudden onset of hypertension in a patient who has been normotensive, or the sudden worsening of the hypertension makes us suspicious of renal arterial insufficiency or occlusion,^{6, 20} and requires careful evaluation of the renal arterial circulation. History of attacks of "nervousness," palpitation, sweating, associated with high blood pressure in an adult, should

arouse our suspicion of pheochromocytoma; bouts of muscular weakness, associated with hypertension suggest primary aldosteronism, etc.

PHYSICAL EXAMINATION

After a thorough medical history, we proceed to do a complete and thorough physical examination. This may be completely negative early in the course of hypertension, except for an elevated blood pressure. However, we should try to evaluate and classify the eye grounds, look for

evidence of left ventricular enlargement, decreased peripheral pulsations, mainly in the lower extremities, and listen carefully and patiently for bruits in the upper quadrants of the abdomen for suggestion of renal arterial stenosis or occlusion. A very slow ventricular rate indicating complete heart block will explain a high systolic pressure. There are many other points in the physical examination, too numerous to mention in detail, which will not escape the notice of the astute clinician. May I only stress the importance of routine rectal examination in males, which may reveal enlargement of the prostate and give a clue

Table 2
AN ETIOLOGICAL CLASSIFICATION OF HYPERTENSION

- I. **Arterial Hypertension** (elevation of systolic and diastolic blood pressures)
 - A. *Essential Hypertension*
 1. Labile (intermittent)
 2. Established ("fixed")
 - B. *Renal Hypertension*
 1. Bilateral kidney disease
 - a. Glomerulonephritis
 - b. Chronic pyelonephritis
 - c. Diabetic glomerulosclerosis
 - d. Congenital polycystic kidneys
 - e. Periarteritis nodosa
 - f. Scleroderma
 - g. Lupus erythematosus
 2. Unilateral kidney disease
 - a. Inflammatory, thrombotic, embolic or atherosclerotic obstruction of renal artery or of branches
 - b. Chronic pyelonephritis
 - C. *Adrenal Hypertension*
 1. Pheochromocytoma
 2. Primary aldosteronism
 - D. *Neurogenic Hypertension*
 1. Brain tumors
 2. Concussion of brain
 3. Epilepsy
 4. Increased intracranial pressure
 5. Encephalitis
 6. Diencephalic syndrome
 7. Lead encephalopathy
 - E. *Hypertension of Coarctation of the Aorta*
 - F. *Hypertension of Toxemia of Pregnancy*
 1. Preeclampsia
 2. Eclampsia
 - II. **Systolic Hypertension**
 - A. Caused mainly by an increased stroke output of the left ventricle
 1. Complete heart block
 2. Aortic regurgitation
 3. Patent ductus arteriosus
 4. Thyrotoxicosis
 - B. Caused mainly by a decreased distensibility of the aorta
 1. Arteriosclerosis of aorta
 2. Coarctation of aorta
- h. Gouty nephritis
 - i. Nephrocalcinosis
 - j. Necrotizing nephrosis
 - k. Renal amyloidosis
 - l. Radiation nephritis
 - m. Obstructive uropathy
 - c. Obstructive uropathy
 - d. Renal tumor
 - e. Perinephritis
 - f. Renal hematoma
 3. Cushing's syndrome
 4. Adrenogenital syndrome
 8. Bulbar poliomyelitis
 9. Tabes dorsalis
 10. Transverse myelitis
 11. Transection of the cord
 12. Polyneuritis
 13. Postdiphtheritic neuritis
 14. Porphyria
 5. Arteriovenous fistula
 6. Severe anemia
 7. Beriberi
 8. Paget's disease of bone

(From Hollander, W.: Med. Clin. North America, p. 1408, Sept. 1957.)

to a possible chronic obstruction of the urinary tract.

LABORATORY STUDIES

Having completed a detailed history and physical examination, the physician proceeds to determine what laboratory tests are indicated. It is not possible to stereotype these tests. But one may start with the routine tests which consist of a random urine specimen, complete blood count, chest x-ray, and an electrocardiogram. If the random urine specimen is found to be free from protein and cells and to have a specific gravity of at least 1.020, it usually indicates sound kidneys. However, should this single urinalysis be inconclusive, one should proceed to do a concentration test and a blood urea nitrogen. Depending upon the clinical impression and the result of these laboratory tests, one may proceed to do more specialized and complicated studies, such as intravenous pyelograms, renograms, urea clearance, Howard's test, and finally an aortogram. I may stress the importance of making any indicated observations and laboratory determinations of the thyroid function before the administration of iodine containing contrast for pyelograms or aortogram.

It is not within the scope of this presentation to discuss the indications for these studies, the techniques and interpretation of results. Ischemic renal disease due to renal artery stenosis or occlusion is probably the most common secondary form of hypertension we encounter in our practice. Its frequency is estimated at 2.5-5 per cent of all severe hypertension.⁶

Other laboratory studies may be needed, depending upon the clinical impressions. For example, catecholamine determinations are indicated if the presence of pheochromocytoma is suspected, ketosteroids in Cushing's disease, etc.

PROGNOSIS

In secondary hypertension the prognosis depends upon the underlying cause. For example, in coarctation of the aorta, pheochromocytoma, and unilateral kidney disease, the prognosis is usually good if surgery is successful. In aortic insufficiency, if

severe or progressive, the prognosis is usually poor. However, recent advances in open heart surgery and valve replacement may soon influence the prognosis.

In essential hypertension the prognosis is often unpredictable. Sigler states that a generalization is almost impossible, because in the vast majority of cases one cannot tell exactly when the hypertension has developed.²² However, he thinks that an approximate estimate of the possible prognosis in any hypertensive patient seen for the first time may be made from different findings, classified roughly into four grades:²²

"Grade I: Patients presenting a fluctuating low-grade hypertension with blood pressure varying between 150 and 180 systolic, and 90-110 diastolic, and returning spontaneously to normal levels from time to time and in whom no evidence of structural cardiovascular or renal changes is noted. The prognosis is good. The patient may live many years.

"Grade II: Patients with blood pressure levels of 180-220 systolic and 110-130 diastolic with comparatively little spontaneous fluctuation, but with return to normal level brought about by rest and sedatives and presenting very early retinal and cardiovascular changes. The prognosis as to longevity is good under proper management.

"Grade III: Patients with a persistently high blood pressure of over 220 systolic and over 130 diastolic with no drop induced by rest and sedatives, and presenting fairly advanced retinal changes without exudate, some cerebral changes, and perhaps more or less reduced renal function. The prognosis must be guarded. The patient may perhaps live two to four years, but his prospects are better under the new anti-hypertensive drug therapy.

"Grade IV: Patients presenting the malignant type of hypertension. Prognosis is very poor, but perhaps may be modified by the newer drugs."

It must be stressed that the height in blood pressure alone is not the main basis for prognosis. The associated organic cardiovascular, retinal, cerebral and renal changes are the most important criteria. Marked structural changes may occur with low-grade hypertension, and very little change in the presence of marked hypertension.

We may pause awhile and ask ourselves this question: With the advent of newer hypotensive drugs has therapy affected favorably prognosis and longevity, and if so, should we treat every case of elevated blood pressure? According to clinical and experimental evidence, high blood pressure has a damaging effect on the brain, heart and kidneys; and a variable degree of damage to one or more of these organs has occurred in 75 per cent of patients when they first present themselves for treatment. Hypertension is believed to accelerate arteriosclerosis, which is claimed to be three times more frequent among hypertensives than normotensives. The risk of arteriosclerotic heart disease is claimed to be six times greater in hypertension and Sokolow states that arteriosclerosis remains the commonest cause of death in hypertension. Life insurance statistical evaluation states that even the slightest sustained elevation of diastolic pressure may modify the patient's longevity.^{15, 16, 26}

Simpson and Smirk, on the basis of twelve years' experience with hypotensive drugs feel that it would be possible to prevent the development of malignant hypertension by the application of an adequate blood pressure control in patients with different degrees of retinopathy.²³ (During the twelve years' observation since December, 1949, about 700 patients with retinal grades II and III, have been treated. Of these, only one patient developed malignant hypertension while on therapy. Several patients, however, who had not undertaken treatment came back later with malignant hypertension. Besides, there has been during the last five to six years, a considerable reduction in the number of patients at their clinic with malignant hypertension. (The five years' survival rate of patients with malignant hypertension treated at Simpson and Smirk Clinic is estimated at 62 per cent for females and 36 per cent for males and taken together at 45 per cent.^{13, 23})

TREATMENT

→ I would like to stress that we should attempt to treat "a patient with hypertension" and not an elevated blood pressure.

The patient, as he first presents himself to the physician, will probably be tense, frightened and under constant fear of impending catastrophe, a stroke. For most patients, stroke is synonymous with high blood pressure.

(To allay the patient's fear and apprehension is the first and prime duty of the physician. An attitude of quiet self assurance on the part of the physician is of the utmost importance.) The patient should be impressed that he is in safe competent hands, that his disease is well understood by his physician and that it is manageable and thus does not warrant excessive concern and apprehension. A "rapport" between patient and physician should be established, and should be based on a firm but sympathetic reassuring attitude of the physician. The physician should be able to evaluate his patient as a whole: mode of living; likes and dislikes; attitudes and social activities; conditions at home and at work; stressful situations and habits with regard to excesses of food, alcohol and tobacco, rest and exercise, recreation, hobbies, etc.

A positive, optimistic attitude toward the patient is recommended; he should be reassured as much as possible and his fears allayed; he should be made aware of stressful situations that may raise his blood pressure. He should be instructed to reduce his weight gradually, if indicated, meanwhile the art of rest and relaxation should be nurtured and moderate exercise in the form of long walks, golfing, fishing, and the like should be encouraged. Salt intake should be limited and if there is actual cardiovascular failure, not more than half a gram of salt should be allowed daily.

The treatment of hypertension itself implies the treatment of the underlying disease which causes hypertension. If such an underlying disease is recognized and can be removed, the hypertension is usually cured. However, in essential hypertension therapy must necessarily be empiric.

DRUG THERAPY OF HYPERTENSION

Different groups of drugs have been used in the treatment of hypertension. These include diuretics, autonomic agents and peripheral vasodilators — table 3. The group of diuretics that is mainly in use

Table 3
AUTONOMIC AGENTS USED IN THE TREATMENT OF HYPERTENSION

Drugs	Site of Action
Rauwolfia alkaloids Reserpine Rescinnamine Syrosingopine Deserpidine	May act within the central nervous system to reduce sympathetic tone, as well as on postganglionic adrenergic neurons. ^{2, 7, 8}
Veratrum Alkaloids Protoveratrine A & B Cryptenamine Alkavervir	Produce reflex vasodilation by stimulation of baro- and chemoreceptors in carotid sinus, aortic arch, and heart. ⁵
Ganglionic blocking agents Hexamethonium Pentolinium Chlorisondamine Mecamylamine	Interrupt transmission of autonomic nervous impulses at all autonomic ganglia. ^{18, 19}
Adrenergic neuronal blocking agents Guanethidine Bretylum Rauwolfia alkaloids	Interrupt transmission of impulses by an action on postganglionic adrenergic nerves. ⁴
Adrenergic blocking agents Dibenzamine Dibenzylamine	Interfere with transmitter action of sympathetic mediator by an action on an effector site. ⁸
Decarboxylase inhibitors Methyldopa	Site of action uncertain. Inhibits decarboxylation of dihydroxyphenylalanine and other aromatic amino acids. ¹⁴
Mebutamate	Purported to act within CNS to reduce sympathetic tone. ³
Direct peripheral vasodilators Hydralazine	Produces direct effect on vascular smooth muscle. ²¹

Source: Stone & Beyer

nowadays is the thiazide group, which has been universally accepted in the routine medical care of the hypertensive patient. Chlorothiazide (Diuril®) is the parent compound and is usually used in the dose of 500 mgms twice daily. A number of derivatives are available, like Hydro-diuril® or Esidrix,® etc. The latest addition to the family is a polythiazide, marketed by Pfizer under the trade name of Renese.® This drug seems to have a high degree of safety, is equally potent orally or intravenously and seems to be completely absorbed from the gastrointestinal tract. Clinical observation of this new drug tends to indicate that it is a more potent hypotensive drug than other members of the family and my personal experience with it warrants this clinical impression. The dose in mild and moderate hypertension is two to four mgms. daily, and for severe hypertension four mgms. daily. Renese, like other members of the thiazide family is effective when used alone and seems to potentiate the effect of other anti-hypertensive agents.⁵

The thiazide group alone is effective in about 30 per cent of mild hypertension. The

tendency is to start with the thiazide group alone and after two to four weeks, for those patients who do not respond, a combination of drugs is indicated. The next drug to be added is usually a Rauwolfia compound, for example, Serpasil® 0.25 mgms. once or twice daily. This regimen is continued for at least two to four weeks longer and, if found ineffective, is reinforced by the addition of another drug. This is usually hydralazine (Apresoline®) in the dose of ten mgms., four times daily, then increased gradually in the next four to eight weeks to a maximum of 75 mgms. four times daily if needed. If blood pressure is not controlled by this dosage, a ganglion blocking agent, guanethidine (Ismelin®) may be added in an initial dose of twenty to twenty-five mgms. daily, and then increased by ten mgm. increments at seven to fourteen day intervals until a significant response has been achieved. It is important that the dose be gradually titrated for each patient beginning with the smallest possible dose. One must keep in mind the dangers of excessive blood pressure reduction in patients who have serious renal vascular

damage and/or cerebral vascular insufficiency. It has been suggested to equilibrate the blood urea nitrogen with the diastolic blood pressure; if blood urea nitrogen is less than 30 mgms. per cent, the diastolic blood pressure may be reduced to normal; with a blood urea nitrogen of 30 to 60 mgms. per cent, diastolic pressure should not be reduced to less than 100 mms. of mercury and with a blood urea nitrogen of 60 mgms. or more, the blood pressure should not be lower than 110 mms. of mercury.⁵

In malignant hypertension it is advisable to try to reduce the blood pressure to near normal in one or two days unless there is pronounced nitrogen retention, coronary disease, or cerebral vascular damage. If these complications are present the blood pressure is not to be reduced below 160 systolic and 90 mms. diastolic. The recommended therapy is to start with the full dose of diuretics, together with guanethidine 30 mgms. b.i.d., at breakfast and at bed time. Because guanethidine requires several days to one week to establish good control of blood pressure, a rapid blocking agent is sometimes used for two to three days and then withdrawn according to clinical response. Mecamylamine (Inversine®) may be used in two and a half to five mgm.

Table 4

Indications for Prompt Reduction of Blood Pressure by Administration of Hypotensive Agents Parenterally

- A. Hypertensive crisis (abrupt elevations of blood pressure to dangerously high levels) associated with:
 1. Essential hypertension (usually with hypertensive encephalopathy)
 2. Acute and chronic glomerulonephritis
 3. Toxemia of pregnancy
 4. Pheochromocytoma
 5. Head injury
 6. Severe burns
 7. Coronary insufficiency with or without myocardial infarction
- B. Severe or moderate degrees of hypertension complicated by:
 1. Acute left ventricular failure
 2. Intracerebral hemorrhage
 3. Post operative bleeding at vascular suture lines
 4. Epistaxis
- C. Miscellaneous conditions (when hypotensive drugs cannot be given orally):
 1. Some cases of malignant hypertension
 2. Hypertension in post operative state

Source: Gifford, R. W. Jr.

Table 5
Hypotensive Agents Available for Parenteral Administration In Treatment of Hypertensive Emergencies

Preparation	Method of Administration and Dosage		
	Intra-muscular (mg)	Intermittant Intravenous (mg./20 cc.)	Continuous Intravenous (mg./L.)
Reserpine	2.0-10	—	—
Ganglion blocking agents			
Chlorisondamine chloride (Ecolid)	2.5-25	—	—
Pentolinium tartrate (Ansolsen)	2.5-50	5	50-150
Trimethaphan camphor sulfonate (Alfonad)	—	—	1000
Hydralazine hydrochloride (Apresiline)	20-60	20-40	50-100
Veratrum			
Alkavervir (Veriloid)	0.8-1.5	2.0	4.0
Protoveratrine A and B (Veralba)	0.1-0.5	0.2	2.0
Sodium Nitroprusside	—	—	60-180
Fentolamine (Regitine)	5-20	100	100-500

Source: Gifford, R. W. Jr.

doses, at frequent intervals until blood pressure falls then the intervals between doses are extended.²³

Occasionally, there may be some indication for prompt reduction of blood pressure, as in hypertensive crises, acute left ventricular failure, intra-cerebral hemorrhage, etc. — table 4. Here, we have to administer hypotensive agents parenterally — table 5, from Gifford gives the available agents.⁹

No discussion of therapy is complete without mentioning the surgical treatment of hypertension. Surgical treatment of coarctation of aorta, direct renal artery surgery, unilateral nephrectomy (Goldblatt kidney), removal of adrenal tumors, and adrenalectomy in Cushing's disease or aldosteronism are certainly indicated and usually curative. But, sympathectomy for severe essential or for malignant hypertension has lost many of its early enthusiasts because of the discovery of potent hypotensive drugs. Smithwick, *et al* believe that "modern medical therapy should not be considered a rival of surgical treatment. Each method is valuable and should complement the other." Surgery is to be considered in those patients who, for one reason or another, cannot or will not follow the pre-

scribed treatment or for whom medical therapy is unsuccessful.²¹

SUMMARY

- 1. Every person with elevated blood pressure should have the benefit of a complete medical history, physical examination, and necessary laboratory studies with intent to evaluate and classify the hypertensive disease and determine the proper therapy.
- 2. Both clinical observation and experimental work tend to indicate that controlling high blood pressure and keeping its level as near normal as possible is necessary to prevent the development of malignant hypertension.
- 3. Even the mildest levels of sustained abnormally high diastolic pressure seem to affect the patient's longevity. Therapy appears to modify the natural course of essential hypertension and, when effective, tends to postpone or prevent the more serious complications, reduce morbidity and prolong the patient's life. □

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Pasteur Medical Building, Oklahoma City, Oklahoma

OSMA REGIONAL POSTGRADUATE COURSE*
"CENTRAL NERVOUS SYSTEM"

Hotel Lawtonian

Lawton, Oklahoma

February 19, 1963

AFTERNOON

EVENING

- 4:30 p.m. Involuntary Movement Disorders, Tics, Tremors, Chorea
- 5:00 p.m. Convulsive Diseases—Clinical Advances
- 5:30 p.m. Strokes—Diagnostic Problems

- 7:00 p.m. Therapy and the Basis of Therapy
 - a. Involuntary Movement Disorders
 - b. Convulsive Disorders
 - c. Strokes

Instructors: G. R. Haase, M.D., C. G. Gunn, M.D., John Gogerty, Ph.D.
REGISTRATION FEE \$7.50 (Includes Dinner)
AAGP Credit—4 Hours—Category 1

*See page 69 for Shawnee Program on "The Liver"

Role of the Kidney in Hypertension*

H. EARL GINN, M.D.**

EFFECTIVE TREATMENT of hypertension with prevention of neurological and cardiovascular complications depends upon early, accurate diagnosis. The present paper is concerned with the role of the kidney in hypertension and with currently available means of recognizing this role.

ESSENTIAL HYPERTENSION

An hereditary predisposition to "essential hypertension" is well established.^{1, 2} However, no direct evidence is available to ascertain whether this pre-disposition is transmitted as an alteration in a single gene³ or as a complex of multiple factors,⁴ or, indeed, if the hereditary factor represents a disease. Four fields of investigation have been pursued in an attempt to determine whether this disease is of renal origin.⁵

(A) High levels of angiotensin II, a substance produced from the interaction of renin with blood, have been found in hypertensive subjects.⁵ The increased levels of angiotensin II in patients with essential hypertension is not caused by augmented production, but by decreased destruction.^{7, 8} Furthermore, assays of angiotensin early in the course of the disease suggest that these levels are insufficient to account for the observed elevations of blood pressure.⁹

(B) An increase in the sodium concentration of arterial walls has been found in hypertensive patients¹⁰ and there is some evidence that these subjects have increased salt hunger.¹¹ Numerous investigators, however, have demonstrated that acute salt loading of essential hypertensive patients results in excessive renal sodium excretion rather than retention.¹²⁻¹⁷ It is, therefore, difficult to indict a primary role of the kidney for salt retention in essential hypertension.

(C) A third line of investigation has dealt with the possibility that the normal kidney may secrete an anti-pressor substance which may be deficient in essential hypertension.¹⁸ Evidence for an hereditary renal parenchymal lesion in essential hypertension, however, is lacking. Furthermore, any loss of nephron population is considered to be a result of vascular lesions^{19, 20} rather than a precipitating factor.

(D) Swann²¹ recently has suggested an inherited premature loss of elasticity of the kidneys in essential hypertension leading to a reduction in functional distention with resultant secretion of renin and formation of angiotensin. Although experimental data to support his concept are presented the demonstration of pathological changes in the renal interstitium during the early course of essential hypertension is not presently available.

Once hypertension develops, regardless of the predisposing mechanisms, a chain of events involving the kidney augments the degree of hypertension. (Early in the course of the disease increased renal sodium excretion following an acute saline load is often the only abnormal renal function.) Au-

*From Department of Medicine, University of Oklahoma Medical Center and Medical Service, Veterans Administration Hospital, Oklahoma City, Oklahoma.

**Clinical Investigator and Instructor in Medicine.

toregulatory vasoconstriction is intense within the kidney leading to eventual nephrosclerosis and secondary parenchymal deficiency which may predispose to pyelonephritis. After this stage, urinalyses reveal albuminuria and microscopic hematuria, cylinduria and occasional pyuria and there is progressive deterioration in glomerular filtration and renal plasma flow. High angiotensin levels interact with the adrenal cortex to produce increased aldosterone secretion,^{22, 23} thereby modifying electrolyte and water metabolism. Furthermore, a combination of excessive levels of angiotensin and aldosterone may precipitate a "malignant" course.^{24, 25} These factors influence the progression of the disease in any given patient. The therapeutic measures aimed at retarding these events are discussed elsewhere in this issue.²⁶

BILATERAL KIDNEY DISEASE

Hypertension is of sudden onset in acute glomerulonephritis and is usually preceded by an acute streptococcal infection. The urine most often is initially concentrated (approximately 1.020) and contains albumin, "ghost cells," and hematin and red cell casts. Due to easy fragmentation of the "ghost cells," they may be missed on microscopic examination unless uncentrifuged, as well as centrifuged, urine is examined. The hypertension is usually accompanied by edema, scanty and bloody urine and urea retention. Hypertensive encephalopathy and congestive heart failure are frequent complications.

In chronic glomerulonephritis hypertension often has an insidious onset and is accompanied by an unpredictable progression of renal insufficiency. The urine characteristically has a fixed low specific gravity and contains albumin, casts, and red and white blood cells. Exacerbations may follow non-specific viral or bacterial infections.

Hypertension is common in chronic pyelonephritis.²⁷ However, since pre-existing renal ischemia predisposes to kidney infection, it is difficult to ascertain which was the initial lesion. Urinalysis usually reveals albumin, casts and white blood cells but may be normal during a quiescent stage. Urine culture, colony counts and/or a Gram stain

of uncentrifuged urine substantiate the diagnosis. Urinary tract abnormalities are frequently found on a careful urological study.

Other causes of bilateral renal hypertension^{28, 29} and diagnostic tests are listed in table 1. The history, physical examination and appropriate laboratory tests are helpful in differentiating these however, a renal biopsy may become necessary to establish the diagnosis and to prescribe proper treatment.

UNILATERAL KIDNEY DISEASE

In recent years interest in unilateral renal disease as a cause for hypertension has been intensified by the development of refined diagnostic procedures and by the demonstration that many patients can be cured surgically. As late as 1956, Smith³⁰ estimated that only about 2 per cent of the hypertensive population had a renovascular lesion, however, more recent reports suggest an incidence of five per cent to 20 per cent.^{31, 32}

The mechanism for the production of hypertension probably involves ischemia of renal tissue, decreased renal arteriolar pressure or flow, or a reduction in functional renal distention which stimulates the juxtaglomerular apparatus to release renin^{21, 33, 35} This proteolytic enzyme splits a decapeptide, angiotension I from an alpha 2 globulin. A circulating, converting enzyme splits histadyl-leucine from the decapeptide and the resulting octapeptide, angiotensin II, is the vasoactive substance.³³ Angiotensin II has been demonstrated to cause the adrenal cortex to release aldosterone^{24, 25} and the resulting clinical circumstance may mimic primary aldosteronism.³⁶

Previous attempts^{33, 37, 38} to characterize the clinical features in unilateral renal disease have suggested that the disease should be suspected in the following:

- (1) Those with an inappropriate age of onset of hypertension, i.e., under 25 or over 50 years of age;
- (2) A sudden acceleration of previously benign hypertension;
- (3) A history and/or physical examination suggesting the possibility of a renal vascular accident, e.g., renal trauma, peripheral emboli, unexplained flank or abdominal pain, or abdominal bruit, and;
- (4) An absence of family history of hypertension (though a

presence of family history of hypertension doesn't exclude the possibility). As diagnostic techniques have become more available and larger groups of hypertensive patients have been evaluated, it has become apparent that hypertensive unilateral renal disease may mimic all types of hypertension.³¹

The most common renal artery lesions are arteriosclerotic plaques³⁹⁻⁴¹ and stenosis by fibromuscular subintimal proliferation⁴² (which may be associated with coarctation of the aorta). Other causes of renal hypertension secondary to unilateral renal disease are listed in table 2.^{33, 39-57}

The predictive tests currently used to

differentiate unilateral renal disease are listed in table 3. A properly performed intravenous pyelogram and a renogram, when both are used as screening procedures, will detect a disparity in renal size or function in a majority of cases of unilateral renal disease.⁶³ The techniques for performance and interpretation of intravenous pyelograms, renograms and aortorenal arteriograms are presented elsewhere in this issue.⁶⁹ An aortorenal arteriogram is helpful in localizing an anatomical lesion, such as an atherosclerotic plaque or a stenotic area, however it does not predict whether the particular lesion is producing hypertension.

A variety of procedures for separated renal function studies, based on the physiological principle that an ischemic kidney

TABLE 1

RENAL HYPERTENSION SECONDARY TO BILATERAL RENAL DISEASE
Causes and Special Tests

TESTS	Urine Micro, Addis Count	Urine Gram Stain	Urine Culture and Colony Count	Urine Sugar	Urine Albumin	Specific Gravity	Urine pH	Creatinine Clearance	Urine Calcium	Bence-Jones Protein	Congo-red	Gum Biopsy	L.E. Prep	Skin and Muscle Biopsy	I V P	Throat Culture, ASO Titer	Glucose Tolerance	Serum Proteins	Serum Ca, PO ₄ and Alkaline Phosphatase	Inferior Venocavagram	Lower Urinary Tract Exam,	Urine Amino Acids	Serum Uric Acid
TYPE OF BILATERAL RENAL DISEASE				+ Denotes Where Listed Test is Especially Helpful																			
1. Acute Glomerulonephritis	+				+	+		+								+			+				
2. Chronic Glomerulonephritis	+				+	+		+								+		+	+				
3. Pyelonephritis	+	+	+		+	+		+							+			+			+		
4. Diabetic Glomerulosclerosis	+			+	+	+		+									+	+					
5. Polycystic Kidneys	+	+	+		+	+		+							+						+		
6. Systemic Lupus Erythematosus	+				+			+					+					+					
7. Periarteritis Nodosa	+				+	+		+						+									
8. Scleroderma	+				+			+						+									
9. Gouty Nephritis	+				+																		+
10. Nephrocalcinosis	+				+	+	+		+						+			+					
11. Necrotizing Arteriolitis					+									+									
12. Renal Amyloidosis					+			+		+	+	+						+				+	
13. Radiation Nephritis					+			+							+								
14. Obstructive Uropathy					+										+						+		
15. Bilateral Renal Venous Occlusion					+										+			+		+			
16. Renal Agenesis					+	+		+							+						+		

Table 2

RENAL HYPERTENSION SECONDARY TO UNILATERAL RENAL DISEASE

1. Atheromatous plaques³⁹⁻⁴¹
2. Fibromuscular subintimal proliferation⁴²
3. Unilateral atrophic pyelonephritis^{43, 44}
4. Renal infarction⁴⁵
5. Renal carcinoma^{46, 47}
6. Atresia of renal arteries⁴⁸
7. Renal tuberculosis⁴⁹⁻⁵¹
8. Post traumatic renal artery stenosis⁵²
9. Aberrant renal arteries⁵³
10. Arteriovenous fistula of kidney⁵⁴
11. Aneurysm of renal artery⁵⁵
12. External pressure due to tumor⁵⁶
13. Fibrous hull, perinephritis, renal hematoma⁵⁷
14. Thromboangiitis³³
15. Obstructive uropathy²⁸

has a markedly increased tubular sodium and water reabsorption relative to its filtered load, have been proposed.⁶³⁻⁶⁸ We have employed, essentially, the recent modifications of Stamey and colleagues,⁶⁷ utilizing the infusion of urea and pitressin to augment differences between the kidneys. Following careful bilateral ureteral catheterization, glomerular filtration rate (clearance of inulin), effective renal plasma flow (clearance of sodium para-aminohippurate), and tubular sodium and water absorption in each kidney are measured during water diuresis. Five mU of aqueous pitressin per kilogram of body weight are then infused intravenously followed by infusion of eight per cent urea in isotonic saline containing aqueous pitressin (5mU/kg/hr) at a rate of 10 ml per minute. The above listed parameters are determined for an additional three to five collection periods. Tubular sodium and water absorption are calculated per unit of filtered load and results from the two kidneys are compared. When expressed in this fashion there are significant disparities between the function of a kidney with a renovascular lesion and the contralateral kidney, whereas non-renovascular types of unilateral renal disease have similar extrac-

tion ratios for sodium and water in both kidneys. Considerable functional data are obtained on the "uninvolved" kidney so that the possible hazard of surgically removing the "involved" kidney may be predicted. Furthermore, it may be possible utilizing this technique to diagnose small segmental renal artery lesions which are missed by intravenous pyelograms and renograms.⁶⁷

SUMMARY

The role of the kidney in the production of essential hypertension and of hypertension secondary to bilateral and unilateral renal disease are discussed. Accurate diagnosis of the lesion is essential for appropriate therapy and can often be established by the characteristic blood, urine, and pyelographic findings. Specific tests which may be helpful in the differentiation of bilateral renal disease are listed (table 1). Special attention is given to the predictive tests used in the evaluation of unilateral renal disease since this is a potentially curable lesion.

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Table 3

PREDICTIVE TESTS FOR UNILATERAL RENAL DISEASE

1. Intravenous pyelogram⁵⁸⁻⁶⁰
2. Radioactive renogram^{31, 61-63}
3. Separated renal function studies⁶³⁻⁶⁸
4. Aortorenal arteriogram^{63, 66, 68}

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NOTE: References 26 and 69 are to (26) Bressie and Conrad, and (69) Knox, present issue. Their titles, Vol. and page number are not presently available.

800 N.E. 13th, Oklahoma City, Oklahoma

A Radiologist Looks at Hypertension

GAYLORD S. KNOX, M.D.*

IN THE DIAGNOSIS and management of the many patients with hypertension, the role of the radiologist is a minor one—*except in those patients who have hypertension caused by surgically-correctable lesions* (table 1). While perhaps constituting a minority in the overall problem, they are of prime interest because these are patients for whom definitive therapy may be available.

Methods of diagnosis in patients with coarctation of the aorta, adrenal tumors and toxemia of pregnancy are widely known and familiar to all. However, the relatively recent recognition of a group of conditions known as reno-vascular diseases as a major cause of hypertension and the even more recent development of definitive diagnostic techniques applicable in these conditions has focused our attention on the kidney and its blood supply.

After Bright established the relationship of the kidney to hypertension in 1833, the next major advance occurred in Stockholm where in 1898, Tigstedt and Bergman²³ discovered the enzyme renin in extracts of the kidney, and described most of its important properties as a pressor substance. Their observations lay fallow until the next advance in 1934 when Goldblatt and his colleagues⁵ produced hypertension in animals by constricting the renal artery. Attempts to relate these observations and to correlate them with human hypertension have

occupied the energies of many investigators over the succeeding years.

We now recognize unilateral renal disease and occlusive renal arterial disease as significant causes of hypertension. The fact that nephrectomy or arterial reconstruction may lower blood pressure in patients with such lesions perhaps lends a false aura of understanding to this particular type of hypertension for recognition has only added to the list of renal hypertensions, not explained the mechanisms. Recent studies^{3, 6, 17, 21} however, seem to indicate that where there is a balance between available blood supply and functioning renal parenchyma, normotension results. If there is a greater diminution in blood supply than there is functioning renal parenchyma, ischemia and hypertension may follow.

Butler's initial report² of hypertension cured by nephrectomy in 1935 was followed by reports of many nephrectomies for hypertension. Unfortunately the larger series had only a 25 per cent to 30 per cent improvement rate.^{1, 20}

In the past ten years, however, improved methods of selection have changed this picture. Howard and Conner⁶ believe that with proper utilization of these methods of selection of candidates for surgery a 90 per cent or better improvement rate can be reached.

The patients with hypertension who should be thoroughly investigated for the presence of unilateral renal vascular disease are those who manifest one or more of the following features in their history or examination^{4, 14}:

1. Less than 30 years of age.
2. Hypertension progressive in nature with the development of symptoms.

*Associate Professor, Department of Radiology, The University of Oklahoma Medical Center.

3. A history suggestive of renal trauma or renal vascular accident.
4. Manifest cardiac, renal or cerebral complications of hypertension.
5. Known recent onset (at any age) with angiospastic changes in ocular fundus.
6. Abrupt acceleration of chronic essential hypertension.
7. Systolic or continuous bruit over the lateral upper portions of the abdomen.
8. Disparity in size or function of the kidneys on urographic studies.

The patient then is selected as a candidate for further study on the basis of clinical findings. "Further study" in this case means a battery of examinations, some of which are simple, but others are expensive, time consuming and more or less hazardous. Proceeding with these studies *must* be justified by the possibility that in the individual patient this course may lead to real relief—to the possibility that in this patient the hypertension will be cured.

Several diagnostic procedures are indicated. These are:

1. "Special" intravenous urogram.
2. Radio-hippuran renogram.
3. Split function renal studies.
4. Renal angiography.

1. "*Special*" *Excretory Urogram*: The "special" excretory urogram³ is a modification of the standard excretory urogram designed to give information about the status of renal blood flow and tubular urine flow. The study is done by injecting 30-50 ml of 75 per cent contrast material intravenously as rapidly as possible and taking films of the renal areas at one-half, one, two, three, four, nine and 30 minutes.

If there is unilateral ischemia, tubular urine flow rate is slowed and there is a resultant increased resorption of water. The hyperconcentration and slow flow may be manifest on the special urogram as delayed calyceal filling, hyperconcentration on late films or as a dense delayed nephrogram. If the blood flow is severely impaired, the nephrogram may be faint or absent. Other renal diseases may delay calyceal filling but *hyperconcentration on late films seems to*

be uniformly associated with renal ischemia.

2. *Radio-hippuran renogram*: This study is done by placing radiation detectors in the vicinity of the kidneys and recording the rise and fall of radioactivity after the intravenous injection of I-131 labeled hippuric acid.

The radiation detection apparatus consists of paired crystal detectors feeding through paired pulse-height selectors, ratemeters and arithmetic read-out recorders. The equipment is moderately expensive; however, the test is simple to run and can be done even in patients sensitive to iodine, since the dose of iodine (by weight) is far less than that given in a standard skin test.

Although the test is simple to run, the procedure must be standardized in each laboratory and each needs to work out his normal curves. There are a number of excellent articles dealing with this technique.^{9, 12, 18, 22, 25, 26}

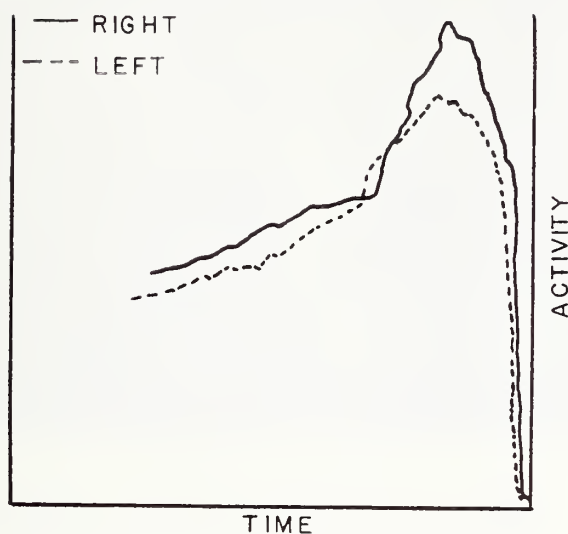
The isotope renogram, in cases of renal arterial disease, may show delay in the initial rise, flattening of the functional phase, or most commonly, prolongation of this phase with a delay in the decline of the tracing (figure 1).

Both of these tests supply information of the same type. The isotope renogram is considered more sensitive and provides the basis for a more complete interpretation of the physiological changes.

3. *Split (or separated) renal function studies*: This examination is the province of the urologist and physiologist and will be only briefly discussed here. Some authors²¹ believe that split function studies will, in themselves, usually provide all the information necessary to make the diagnosis of hypertension due to renal vascular disease. Others,^{7, 10, 14} however, believe that the final diagnosis rests on renal angiography and use the split function studies in patients in whom one or more of the following indications exist:⁷

1. There is renographic or arteriographic evidence of an arterial lesion that is amenable to surgical correction.
2. There is evidence of bilateral renal artery disease.
3. Renal arteriography is technically unsatisfactory.

NORMAL RENOGRAM



UNILATERAL RENAL DISEASE

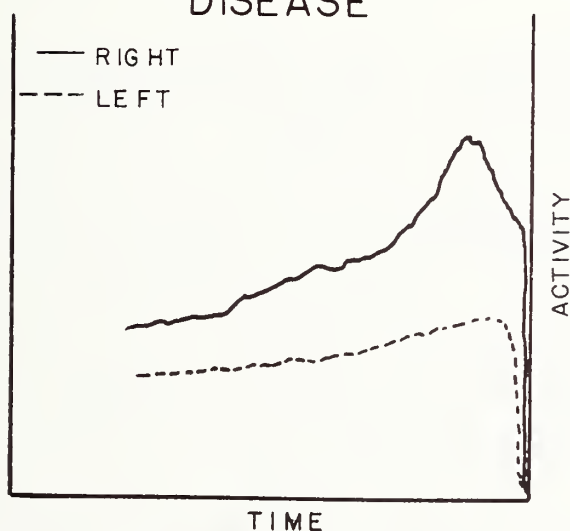


Figure 1. Representative renogram tracings. Upper figure shows a "normal" tracing; the slight asymmetry would not be significant resulting usually from problems in placing the detector exactly over the kidney. The lower figure shows severely depressed function in the left kidney, which could either be due to infarction or to longstanding renal disease resulting in marked loss of functioning parenchyma.

4. There are contraindications to arteriography (e.g. sensitivity to contrast materials).

5. There is evidence suggesting nephrectomy may prove necessary at operation.

4. *Renal arteriography*: Hunt⁷ states "Until more specific diagnostic techniques are devised we must continue to regard renal arteriography as the single most definitive diagnostic procedure for evidence of obstructive lesions of the renal arteries."

There are three methods of opacifying the renal arteries in common use: (1) translumbar aortography above the level of the origin of the renal arteries; (2) aortog-

raphy by percutaneous catheterization of the abdominal aorta, either through the femoral artery or brachial artery with the Seldinger technique;¹⁹ and (3) selective catheterization of the renal arteries using the Ödman radio-opaque catheter.¹³ All three methods have advantages and disadvantages. Translumbar aortography may be the only feasible method in the presence of extensive atherosclerotic disease. Selective catheterization gives by far the best visualization of the renal arteries with minimal doses of contrast material, but in the presence of multiple renal arteries it may be technically impossible.

The hazards of aortography are widely appreciated. Most of the serious accidents reported in the literature have been renal damage and paraplegia. There seems little doubt that most of the accidents have been due to excessive doses of contrast material, particularly to large doses of the more toxic materials (iodopyracet, sodium acetrizate, etc.). The advent of less toxic contrast materials (sodium and methylglucamine diatrizoate, sodium diatrizoate, sodium iothalamate), plus the ability to visualize renal arteries selectively with very small doses, have reduced substantially the very real hazards of arteriography.

The percutaneous transfemoral catheterization is the method of choice in most patients, either for aortography or selective renal arteriography. This method of injection plus serial filming gives maximum information, not only regarding the renal arteries but also regarding the state of the renal parenchyma.

TECHNIQUES

Translumbar aortography: This technique consists of the manual injection of 20-25 ml of radio-opaque contrast material through a six inch, 18 gauge, thin-walled needle inserted from the left flank through the paravertebral tissue into the upper abdominal aorta, followed by rapid serial filming of the renal areas.

This technique is successful in demonstrating the renal arteries in approximately 85 per cent of the cases.⁸ Reasons for unsatisfactory visualization are usually (1) runoff of contrast material into the lower extremities resulting in poor opacifi-

cation of the renal arteries, (2) poor positioning of the bevel of the needle resulting in the stream of contrast medium being directed at the right renal artery giving good opacification of the right but poor opacification of the left and (3) dense opacification of the visceral branches of the aorta obscuring the renal arteries.

Percutaneous Transfemoral Aortography with or without selective renal artery catheterization: This is a more recently introduced method of aortography, described by Seldinger.¹⁹ The materials consist of a needle, a soft coil spring guide wire, and a radio-opaque polyethylene catheter with an open end and side holes near the tip.¹³ For aortography a relatively large bore, straight catheter is used; for selective injection of the renal arteries a small bore catheter with an appropriate preshaped curve near the end is used.

Needle puncture of the femoral artery is performed first and when the needle is well in the artery the coil spring guide wire is inserted through the needle and passed a short way upward into the iliac artery. The needle is then removed leaving the guide wire in place. The catheter is then passed over the guide wire into the femoral artery and the guide wire removed. The catheter is then passed upward, under fluoroscopic control, until the tip lies in the abdominal aorta at the level of the renal arteries. Fifteen to 20 ml of contrast material is then injected with a power syringe and serial films taken.

If selective catheterization of the renal arteries is to be performed, the same procedure is used except that the guide wire is left in the catheter (thus straightening the preshaped curve) until the tip of the catheter is above the origin of the renal arteries. The guide is then removed allow-

ing the catheter tip to assume the appropriate curve and the tip is then guided into the right or left renal artery under fluoroscopic control. Five to eight ml of contrast material is then injected by hand and serial films taken.

Visualization of the renal arteries is nearly always good where catheterization is successful. This technique allows one to re-adjust the tip of the catheter if opacification of the other branches of the aorta interferes with visualization of the renal arteries or, if in selective catheterization the kidney appears to be supplied by more than one artery, the catheter can be withdrawn into the aorta and an aortogram done.

CONTRAINDICATIONS

There are few contraindications to aortography. Established renal disease with advanced renal insufficiency and sensitivity to contrast materials are nearly absolute contraindications. The presence of abdominal aneurysm, or aortoiliac atheromatous disease severe enough to produce claudication are contraindications to the transfemoral route, and either a brachial or translumbar approach should be used.

Indications for aortography in any given case should be definite and the examination should be performed only when the potential value of the information to be gained clearly outweighs the risks involved.

Arteriographic features of renal artery disease:

Partial or complete renal vascular obstruction may be caused by a variety of

TABLE I

- Unilateral renal disease
- Renal vascular obstruction
(artery or vein)
- Coarctation of the aorta
- Pheochromocytoma
- Primary hyperaldosteronism
- Cushing's disease
- Toxemia of pregnancy

TABLE II

- Atherosclerosis
- Fibromuscular medial hyperplasia
- Thrombosis
- Embolism
- Renal artery aneurysm
- Syphilitic arteritis
- Congenital stenosis or coarctation
- Renal vein thrombosis
- Intra-abdominal tumor or cyst
(usually renal tumor)
- Aortic aneurysm
- Hematomas
- Perirenal fibrosis (usually due to retroperitoneal hemorrhage or infection)

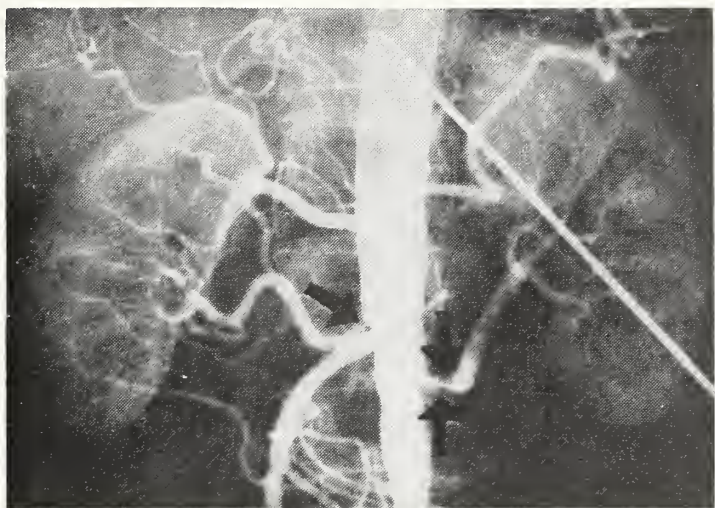


Figure 2. Both renal arteries show plaques. On the left note the post-stenotic dilatation just distal to the double arrow $\rightarrow\leftarrow$.

conditions. These causes are listed in table II. The most common causes are atherosclerosis and fibromuscular medial hyperplasia although embolism and aneurysm are frequently encountered.

The abnormalities of the renal vessels may be classified on the basis of their angiographic appearance as follows:

Plaque: A localized narrowing of the contrast column, usually in the proximal portion, and either symmetrical or asymmetrical. This is often associated with *post stenotic* dilatation (figure 2).

Diffuse arteriosclerosis: These arteries show multiple areas of indentation and change in caliber (figure 3).

Fibromuscular hyperplasia: Arteries showing multiple transverse bands of diminished density across the column, producing a "beaded" appearance, is the usual manifestation of this lesion; however, the pathologic lesion may be singular, and when the patient is young with no other evidence of atherosclerosis, a single lesion of a renal artery associated with post stenotic dilatation may be the manifestation of this condition (figures 4, 5).

Thrombosis or embolism: If the occlusion is complete, the lesion usually is not associated with hypertension; the circulation is lost, so are the secretory and excretory functions of the kidney. Occlusion of part of the blood supply (*e.g.* thrombosis of an accessory renal artery) will cause partial renal infarction and hypertension is to be expected.

Other Changes: The vascular changes associated with pyelonephritis, diffuse arteritis and renal vein thrombosis are less specific; consisting, in the main, of a generalized reduction in the caliber and number of the renal artery branches. In these cases the nephrographic phase may be later than normal in appearing and persist longer after the injection of contrast material into the aorta. The prolongation of the nephrographic phase is a nonspecific finding seen in other conditions that slow down the renal circulation.

Angiographic study of the renal area should be made when any feature of the history, physical examination, isotope renogram, special urogram, or splitfunction studies indicate the possibility of a surgical approach to a lesion that may be causing hypertension. Even if studies indicate one kidney or its blood supply as the offender it is important to know the status of the opposite renal artery. When one kidney is non-functional, it is possible that it is fibrotic rather than ischemic and that a stenosis of the opposite renal artery is responsible for the hypertension. Also, the renal artery on the "good" side must be able to supply the increased demand from compensatory hypertrophy that occurs when a diseased but still functioning kidney is removed from the opposite side. If the artery

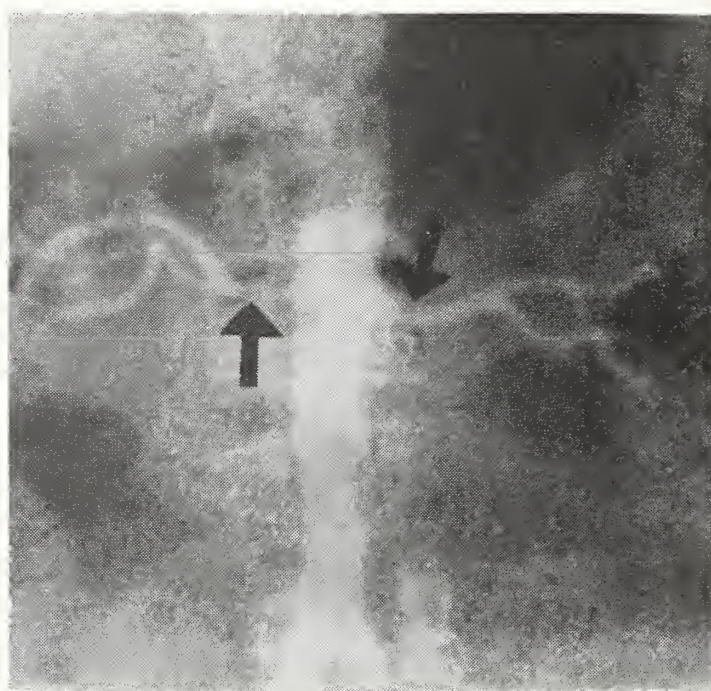


Figure 3. Areas of narrowing near the origin of the left renal artery and near the bifurcation of the right renal artery. The ventral branch of the right renal artery is also involved.



Figure 4. Fibromuscular hyperplasia. Multiple transverse bands are present in the right renal artery as well as an aneurysm (at the arrow ↓). (Film courtesy of Doctor E. D. Kalmon, Wesley Hospital, Oklahoma City, Oklahoma.)

is stenotic compensatory hypertrophy may cause ischemia and then hypertension.¹⁷

SUMMARY

The radiologist's role in the diagnosis and management of hypertension is important in the selection and evaluation of patients with hypertension due to surgically correctable lesions.

When the history or physical examination suggests that the patient may fall into this category, then a progressively more complex work-up is indicated.

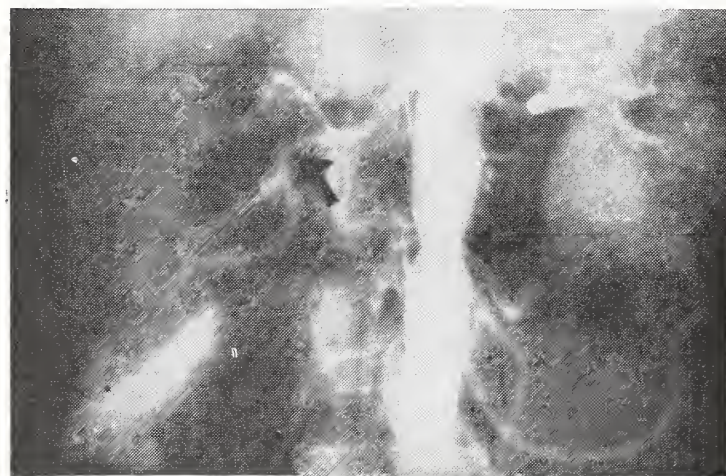


Figure 5. Fibromuscular hyperplasia of the right renal artery with post-stenotic dilatation. Lower arrow (←) shows atherosclerotic plaque in the abdominal aorta. (Film courtesy of Doctor E. D. Kalmon, Wesley Hospital, Oklahoma City, Oklahoma.)

In the group with possible reno-vascular hypertension, the studies should include the "special" urogram, the isotope renogram, splitfunction studies and, if these indicate a vascular lesion, renal arteriography. Except where contraindicated, all patients in whom vascular reconstruction or nephrectomy for hypertension is contemplated, the status of the renal arteries must be known and this can, at present, be evaluated only by renal arteriography.

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800 N.E. 13th, Oklahoma City, Oklahoma

Neurological Complications of Hypertension, with Special Reference to Hypertensive Encephalopathy

R. E. CARPENTER, M.D.*

PERSONS WITH hypertension are subject to various sorts of cerebral episodes of a vascular nature, most of which are not peculiar to, or dependent upon the hypertensive state. The most common example of this is thrombosis of the intracranial or extracranial vessels supplying the central nervous system. A great deal has been written, particularly since the early 1950's regarding stenotic and occlusive vascular disease of the central nervous system; in fact, articles currently are appearing almost monthly both in specialty and general journals. Since this phase of vascular disease is not directly dependent on the hypertensive state, it will not be discussed here, although it is clearly a subject of considerable importance.

Hypertensive cerebral hemorrhage is a subject upon which discussion will probably never cease. Although this diagnosis is often loosely substituted for occlusive vascular accidents, it constitutes a relatively small percentage (10-20 per cent) of all cerebrovascular accidents. It is a devastating event when it does occur, usually resulting in death. Occasional patients develop an intracortical hematoma, with gradually progressive signs of increased intracranial pressure and focal neurologic deficit, and they may be benefited by neurosurgical intervention, but this is the exception rather than the rule. Several factors are important in the development of cerebral hemorrhage, the first being the obvious fact that when the

intraluminal pressure is abnormally high, the blood will escape through any weakness or defect in the wall having insufficient strength to prevent it.¹ Structural changes in the arteries and arterioles are commonly found in the brains of hypertensive patients. In the small arteries there are often changes identical with atherosclerosis, with loss of muscle from the media. Cerebral arteries are weaker than most other arteries in that the amount of muscle in the media is slight, there is no external elastic lamina and but little adventitia. With a damaged internal elastic lamina and little muscle remaining in the media, the artery may be unable to contain the hypertensive blood and hemorrhage may occur, first into the Virchow-Robin space to form a milary aneurysm² and later into the cerebral tissue. A third factor of importance¹ may be degeneration of perivascular spaces leading to a lack of normal support for the vessel.

In 1928, Oppenheimer and Fishberg³ described what they considered to be a clinical entity, hypertensive encephalopathy. Although they felt it was of relatively rare occurrence, they felt it could be seen in hypertension due to various causes, *e.g.* with acute glomerulonephritis, with toxemia of pregnancy, and less often in persons with hypertension due to other causes. The clinical features "closely resemble an epileptic seizure, consisting of prodromal symptoms followed by tonic and clonic convulsions, with coma continuing after the convulsions."⁴ During the prodromal period, which may last for hours to several days, there are headaches, vomiting, apathy and somnolence, and during this period of time the blood pressure rises and the urinary volume usually diminishes. It was their

*Associate Professor Department of Medicine, University of Oklahoma Medical Center.

feeling that there was no correlation between the presence of various degrees of renal impairment, in fact uremia was usually absent, but there was a definite correlation with the increase in blood pressure. It is readily apparent that the above symptoms could be due to cerebrovascular accidents, or to convulsive seizures secondary to other lesions, such as intracranial neoplasms, etc. There can be little question that this term also has been used too loosely so that the term hypertensive encephalopathy has come into disrepute. It is regarded as a "term with little meaning,"⁵ or one that "should not be used except in the broadest possible sense."⁶ Reasons for this feeling are illustrated in a recent paper⁷ in which 29 cases with a final diagnosis of hypertensive encephalopathy were reviewed with reference to history, clinical and laboratory findings, with a view to determining the incidence of this syndrome as distinct from other complications of hypertension and arteriosclerosis. They found the diagnosis was often confused with subarachnoid hemorrhage, cerebral thrombosis, pseudo-bulbar palsy, uremia and retinopathy. They felt that confusion with basilar artery insufficiency was frequent and they felt that brain stem ischemia could well account for increases in arterial blood pressure, which had led the clinician to suspect hypertensive encephalopathy. They felt that "in our present state of knowledge, it is difficult to determine if a true transient encephalopathy on the basis of vascular spasm exists but as a rare entity," and they wondered if "all hypertensive encephalopathy can be explained by other central nervous system complications of hypertensive arteriosclerotic vascular disease."

Other studies, however, have tended to substantiate the concept that an entity of hypertensive encephalopathy does exist. Moyer⁸ found that measurements of cerebral blood flow, oxygen consumption, vascular resistance and jugular venous pressure were no different in patients with hypertensive headaches than in patients with hypertension without these complications, but they noted that the headaches were relieved by intravenous aminophylline, which

caused an increase in cerebrovascular resistance and decrease in blood flow but caused no change in arterial pressure. The hemodynamic studies in patients with encephalopathy were similar but relief was obtained only by the lowering blood pressure (with Veratrum), which lowered vascular resistance but did not measurably change blood flow. Their explanation for these similar clinical responses (improvement), achieved by divergent effects on cerebral hemodynamics was that hypertensive headaches were due to an increase in blood pressure with a decrease in blood vessel tone, hence dilatation of vessels, and hence relief by an increase in vessel tone with aminophylline. The headaches were also relieved by measures which would reduce arterial blood pressure. They felt that encephalopathy was merely a more advanced phase of the same process in which instance the decrease of vascular tone was so extreme that transudation of fluid into the cerebral tissue was permitted and cerebral edema was present.

This concept is, of course, different from Fishberg's original one that the attacks are due to focal or diffuse cerebrovascular spasm, although either would explain the observation that the brains of patients dying with hypertensive encephalopathy are pale and bloodless.

More recent studies have substantiated Fishberg's concepts^{9, 10, 11} to an even greater extent. Both in rats⁹ and in cats and monkeys,¹⁰ a series of acute experiments were designed (measuring the effects of sudden increases in intraluminal pressure) "to clarify the nature of cerebrovascular spasm that occurs in severe hypertension." Moderate degrees of cerebral vasoconstriction were demonstrated to occur during rapid, severe increases in intraluminal arterial pressure produced by occlusion of the aorta distal to the origin of the cranial vessels. However, vasoconstriction was not considered sufficient to warrant the term "vasospasm" or to account for the temporary cerebral symptoms that are seen in hypertensive encephalopathy. Intravenous injections of Hypertensin, however, produced more intense pial arterial constriction (under direct observation in the experiments) and in further studies¹¹ one animal had clinical signs of

"hypertensive encephalopathy" and in this animal the arteriolospasm and brain swelling were more marked than in any other experiment. This excessive vasospasm could be relieved by lowering the blood pressure with sodium nitroprusside.

These observations are supported by the effects of anti-hypertensive agents in patients with "the syndrome of a sudden elevation of blood pressure preceded by a severe headache and followed by convulsions, coma or a variety of *transient* cerebral phenomena."¹² In fact, Finnerty¹² states that now that there are drugs that effectively reduce high blood pressure, it would seem that if there is any indication for the use of these drugs it is in the therapy of hypertensive encephalopathy. He feels that the sudden coming and going, the variability, and the transitory nature of the cerebral phenomena seen in all types of hypertensive encephalopathy (*i.e.* whether due to acute glomerulonephritis, essential hypertension, pyelonephritis or eclampsia) seem to be explained best by postulation that there is a sudden decrease in cerebral blood flow due to sudden increase in cerebral vasoconstriction. The exact cause or causes of cerebral vasoconstriction is not clear, but neither is the cause of generalized vasoconstriction that characterizes all types of hypertension.

It has been shown that clearing of the sensorium, cessation of convulsions, and release of vasoconstriction follow reduction in blood pressure, so the primary aim of therapy should be a reduction of arterial pressure, and the fact that this is effective is further support of the above concepts.

Whereas barbiturates and magnesium sulfate have long been advocated for the treatment of hypertensive crises, they are not very effective and there are certain obvious practical and theoretical reasons against using these agents in a patient in coma or in whom coma is impending.

The majority of patients with hypertensive encephalopathy due to acute glomerulonephritis can be effectively treated by intramuscular reserpine plus a combination of chlorothiazide (Diuril) and acetazolamide (Diamox) administered intravenously. If a two hour delay in reducing the arterial pressure would jeopardize the life of the patient, Veratrum by intramuscular injection

is added. If the patient is convulsing when first examined, Veratrum is given intravenously but this requires careful titration of the dose.

In the patient with encephalopathy due to hypertensive vascular disease or pyelonephritis, the choice of therapy is dictated by the presence or absence of cerebral or coronary insufficiency. If these complications are absent, reduction of the pressure is accomplished by intramuscular reserpine and, if needed, hexamethonium by intravenous titration. If cerebral or coronary insufficiency is present reserpine intramuscularly alone is recommended. Veratrum intramuscularly can be given also if more drastic anti-hypertensive therapy is felt necessary, but too profound or too rapid reduction in pressure may lead to occlusive arterial events.

It seems apparent therefore that although the symptomatology of hypertensive encephalopathy is not entirely precise and distinct, and that although there still exist some areas of disagreement regarding its pathophysiology, it likely does exist as a clinical entity and demands recognition, not only because appropriate treatment is effective in relieving it, but more importantly, more common but simulating conditions require quite different therapeutic approaches, such as anticoagulants, endarterectomies or neurosurgical treatment.

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Pasteur Building, Oklahoma City, Oklahoma

Ophthalmoscopic Evaluation of Hypertensive Retinopathy

ROY W. TEED, M.D.*

THE CHANGES SEEN in the retinal vascular tree secondary to hypertension can be utilized to evaluate the clinical severity of this disease at the time of examination and by grading the findings, recording them and determining the clinical progress at future examinations. The ophthalmoscope thus becomes an adjunct to many laboratory and clinical findings since the arterioles are true end arteries and represent similar changes that are taking place in the brain and kidneys, spleen and liver.

It is important to understand that hypertension must be diagnosed primarily by conventional means since changes in the vascular tree may be absent or delayed in some individuals and may be imitated in arteriospastic retinitis and acute anemias and in diseases other than hypertension. The presence or absence of arteriolosclerosis provides the examiner with an ability to determine the length of time the hypertension has existed as well as its effect on the vascular structures of other important organs as the brain and kidneys. A high elevation of diastolic blood pressure without changes in the arteriolar wall (arteriolosclerosis) indicates hypertension of short duration while slight elevations with

marked arteriolar changes indicates a condition of long standing. In a known case of hypertension that has been followed for a long period of time where arteriolar changes remain at a minimum it is clinically possible to assume that the vascular bed of the brain as well as the kidneys is capable of withstanding this disease and secondary changes will be delayed over a longer period of time.

ANATOMY PECULIAR TO THE RETINAL VASCULAR TREE

The largest and most informative area for evaluation in hypertensive changes of the retina is concerned with arteriolar structures. Beyond the second bifurcation of the vessels, after they leave the disc, the walls have definitely changed their anatomic structure by losing the intimal layer while the muscular coat ceases to be a continuous plane thus changing the artery into a true arteriole. Consequently the term "arteriosclerosis" is unfortunately confused and not used properly in the clinical description of the eye-grounds. When arteriosclerosis does attack the eye it is in the form of intimal atherosclerosis and usually involves the central retinal artery in a patchy distribution but cannot usually be seen clinically with the ophthalmoscope due to its retrograde position in relation to the optic disc. However, the appearance of a bright refractile "Copper Spot" or "White Spot" may rarely be seen at the disk or slightly beyond and represents an atheromatous plaque. This should suggest to the

*Chief, Ophthalmology Department, Veterans Administration Hospital and Associate Professor, Ophthalmology Department, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

examiner the possible involvement of this disease elsewhere.

The normal vascular wall is transparent and consequently only the column of blood is seen as one examines the vascular tree with the ophthalmoscope. In the arteries and arterioles there is a fine bright reflex stripe or streak which runs in the direction of the vessel's course and is the result of the examining light reflecting from the convex surface of the vessel wall and from the column of blood beneath. This reflex incidently gives the arterioles a lighter color than the veins.

The ratio in size between arteriole and vein is approximately 3:4 and is usually described as the A-V Ratio with the view representing about 25 per cent increase in size over its neighboring or corresponding arteriole. The vein is usually used as a comparative point for evaluating the generalized constriction of the arteriolar system which is described as "attenuation."

The adventitia of the artery and vein join and form a common structure at areas where they cross one another which accounts for the term "nicking" at the A-V crossing as described in Stage II of arteriolosclerosis.

HYPERTENSIVE CHANGES OF RETINAL VESSELS

It is very necessary that a common table be used in the grading of hypertension and also equally necessary that the separation of these grades be simplified but unfortunately there is an overlapping of these grades even in university centers due to different systems that had been adopted elsewhere and introduced locally by physicians who have trained at other institutions or centers of medicine. This only leads to the confusion of what should be a simple analysis. It would be more convenient if an international standard were developed and accepted which would clarify the exchange of information at a clinical level.

The following classification is basically derived from Keith and Wagener's publication and many side effects may be added or subtracted from the different grades but it is felt that simplification of these is the essence of clarity.

Grade I. Attenuation.

Grade II. Focal Spasm.

Grade III. Hemorrhages and Transudates.

Grade IV. Papilledema.

Grade I. Attenuation — This term denotes a generalized reduction in the lumen of the arterioles of the retina. These vessels are reduced in size and consequently the normal A-V ratio of 3:4 is reduced to 2:4 and in severe cases 1:3. This finding also informs us that a similar situation is also present in the arterial system of the brain and kidney.

Grade II. Focal Spasm — Arteries and arterioles usually respond to continual constriction in the retinal tree by a focal spasm of the main branch or one of the side branches and can be recognized by the thread-like appearance of a portion of the vessel. This usually does not persist and may vary during the examination and, in fact, may change location from day to day.

Grade III. Hemorrhages and Transudates — The appearance of hemorrhages and transudates in the clinical course indicates that previous attenuation leading to focal spasm has slowed the blood flow and as a result of ensuing anoxia (as described by Elwyn) the endothelium and basement membrane of the vessel becomes porous permitting the escape of serum as a transudate and of the red blood cells by diapedesis. The appearance of "cotton-wool" spots is recognized by the soft appearing lesion with fluffy edges. These represent the transudated serum in the inner plexiform and nerve fiber layers of the retina and are oyster white in color. These are not "exudates" as described in the literature but a true non-inflammatory transudate.

Grade IV. Papilledema — During the progression of hypertension the phase of edema of the brain is expressed clinically by papilledema. The true mechanism of this condition is not clear at the present time and the explanations are many times controversial but we do know that this manifestation is clinically a serious sign and places the hypertension in a malignant phase. The optic nerve is a projection of the brain and not a true nerve, therefore it can be expected to show changes related to edema or circulatory changes in the

brain. The fluid enters the disk with elimination of the normal depression seen with the ophthalmoscope and elevation of the nerve head occurs as the condition becomes worse with the resultant spread of this fluid into the nerve fiber layer of the surrounding tissue. The disk which normally is fairly well outlined at its borders now shows a "feathering" of the margins. The upper and lower poles of the disk should be used for evaluating this change since the nasal portion is normally rather indistinct due to the anatomical increase in the number of nerve fibers at this area. Hemorrhages appear on the surface of the disc and are found in the surrounding retinal tissue. The veins are large and tortuous due to back pressure in the nerve and spontaneous or individual pulsations (produced by slight finger pressure on the eye) are not present.

METHOD OF MEASURING ELEVATION OF OPTIC NERVE

The elevation is expressed in diopters which permits an evaluation of daily or diurnal progress of the hypertension. The following method must be used to properly measure the elevation: (1) Choose the largest and most distinct vein or artery on the disc surface. (2) Increase the power of the convex lens system of the ophthalmoscope by increasing the black numbers, if the patient or examiner is hyperopic, and decreasing the concave lens system (red numbers), if the patient or examiner is myopic, until the edges of the vessel are blurred. (3) Now reverse this procedure until the vessel wall first becomes clear and note the number of the lens on the ophthalmoscope. (4) Change the light direction to the largest vessel beyond the second branching from the disk and if elevation is present the vessel should appear blurred. (5) Reduce the black numbers on the ophthalmoscope or increase the red numbers until the vessel wall under observation becomes clear. (6) Note the number on the ophthalmoscope. (7) The difference between the number found at stage (3) of the examination and stage (7) is the evaluation expressed in diopters.

This disease of the retinal vessels affects the whole arteriolar tree of the retina while intimal atherosclerosis is spotty and usually affects the central retinal artery and is often associated with hypercholesteremia. Arteriolosclerosis is also classified into four groups:

- Grade I. Increase in reflex stripe.
- Grade II. Nicking at A-V crossing.
- Grade III. Copper wire arterioles.
- Grade IV. Silver wire arterioles.

Grade I. Widening of the Reflex Stripe — As mentioned above there is normally a thin reflex stripe seen on the arteries and arterioles. Due to the hypertension a hyaline deposit is formed at the endothelium and its basement membrane, later on lipids and cholesterol are deposited in the walls making them less translucent thus increasing the amount of light reflected from the surface with a widening of the reflex stripe.

Grade II. Nicking at A-V Crossing — The increase in density of the arteriolar wall following lipid and cholesterol deposits plus the fact that vein and arteriole have a common adventitia at the crossing now eliminates the normal translucency. This, plus the loss of elasticity of the arteriole, results in an apparent absence of the vein at these points and a niche in the vein's continuity is observed. Occasionally the vein distal to the A-V crossing will be much larger than the proximal portion and this is known as Gunn's Sign.

Grade III. Copper Wire — With a more complete involvement of the arteriolar wall, and this is the result of a time element, the entire surface of the vessel becomes opaque so that one is now observing the vessel wall with very little of the red reflex of the blood entering into the picture. As a result a more bronze or copper color covers the whole arteriole. It does take on the appearance of a copper wire that has just been burnished before inserting it in a connection pole of an electrical apparatus.

Grade IV. Silver Wire — As this point is reached the red reflex of the blood has been obliterated and the vessels appear smaller and assume the color of platinum

or silver wire. It appears as though the lumen of the vessel has been obliterated with cessation of the blood flow but this is not true and blood continues to flow through this straight pipestem system with angular branches and with all the graceful dichotomous appearance of the normal vascular tree being eliminated.

OPHTHALMOSCOPIC EXAMINATION

The examination of the eye grounds is best carried out in subdued light as total darkness results in poor fixation by the patient. The peripheral areas of the retina are more easily observed if the patient is directed to move his eyes in the direction of the area to be examined.

A large pupil induced by the use of a mydriatic is an essential part of any ophthalmoscopic examination. Neosynephrine ten per cent is perhaps the safest drug and can be instilled in the cul-de-sac of the eye by pulling down and everting the lower lid. However one must first evaluate the visual acuity, pupillary reactions and extraocular muscles as well as convergence. If the drug is instilled at five minute intervals for three or four doses at the beginning of an examination there is no delay in waiting for mydriasis to take place. It is always necessary to question the patient concern-

ing the history of glaucoma and also to examine the disk for a suggestion of cupping before drops are instilled. Chronic open angle glaucomatous eyes can be dilated with impunity, however, narrow angle glaucoma can be converted into an acute attack by the use of mydriatics.

SUMMARY

1. Ophthalmoscopy is a valuable adjunct to the clinical evaluation of hypertension and four grades of hypertensive retinopathy are presented.

2. The retinal arterioles reflect the condition of the vascular bed of kidneys and brain.

3. Simple and uniform grading of hypertensive retinopathy and arteriolosclerosis is necessary and an international standard would clarify exchange of this clinical information.

4. The changes in the appearance of hypertensive retinopathy are the direct result of the severity of the hypertension.

5. The changes seen in arteriolosclerosis secondary to hypertension are the result of a time factor. Four stages are presented. □

921 N.E. 13th, Oklahoma City, Oklahoma

OSMA REGIONAL POSTGRADUATE COURSE*

'THE LIVER''

Broadway Cafeteria

Shawnee, Oklahoma

February 26, 1963

AFTERNOON

EVENING

4:30 p.m. New Aspects
a. Vascular Anatomy and Physiology
b. Metabolism
c. Evaluation of Hepatic Function
5:30 p.m. Infectious Hepatitis
6:00 p.m. Hepatic Coma

7:30 p.m. Surgery in Liver Disease
8:00 p.m. Problem Case Conference
1. Cirrhosis with Ascites
2. Postoperative Gallbladder Disease
3. Esophageal Varices

Instructors: G. Victor Rohrer, M.D., Jack D. Welsh, M.D., G. Rainey Williams, M.D.

REGISTRATION FEE \$7.50 (Includes Dinner)

AAGP Credit—4 Hours—Category 1

*See page 51 for Lawton Program on "Central Nervous System"

Appraisal of Therapy in Essential Hypertension

JERRY L. BRESSIE, M.D.**

THE AVAILABILITY of effective drugs for lowering the blood pressure in hypertensive patients has provided an opportunity for observing the effects of therapy on the clinical course of hypertensive disease. Almost all studies have assumed that blood pressure reduction was directly related to clinical improvement and were designed principally for determining the hypotensive efficiency of various drugs and drug combinations. Unfortunately few studies have been designed with the principal objective of testing the long-term results of therapy, and in these attempts in this direction the experimental design is highly questionable because of lack of suitable controls and failure to use adequate randomization technics.^{1, 2, 3, 4}

Since we are all concerned with what eventually happens to patients receiving adequate therapy, the course of treated hypertensive disease is being examined to see if it is perceptibly altered by lowering the blood pressure.

Essential hypertension has the following facets which must be considered in the design of any study to clarify the value of blood pressure reduction. First, the prolonged course of hypertension before target-organ damage occurs makes a long-term study mandatory. Second, the variable degree of target-organ decompensation ir-

respective of the degree of elevation of blood pressure makes it necessary to have a great number of patients to have a true cross-sectional representation of the hypertensive family.^{5, 6} And last, the meager understanding of the pathogenesis of hypertension places marked limitation on interpretation of the success or failure of therapy.⁷

Since only one study in the United States has been designed to circumvent some of these problems of effective hypertensive investigation, we shall base many of our tentative conclusions from this source. This study is the Veterans Administration Cooperative Study on Antihypertensive Agents which has chosen only patients with essential hypertension whose average diastolic blood pressure is 90 mm Hg. or greater. The severity of the hypertension is scored from basal diastolic pressure, hypertensive retinopathy, cardiac, renal, and central nervous system abnormalities.

Assignment of a given treatment regimen to a specific patient is carried out using a double blind randomization technic.

Regimens of therapy consist of combinations of reserpine, chlorothiazide, hydralazine, cryptenamine, and ganglion blocking agents. Approximately one-sixth of the mild and moderate hypertensive patients are on placebos of the above drugs.⁸ After the first four years of therapy several generalizations are available.

Chlorothiazide plus reserpine resulted in a greater reduction of arterial pressure than either chlorothiazide or reserpine alone. The comparable placebo group had no appreciable changes in blood pressure. The chlorothiazide, reserpine, and hydral-

*From the Medical Service, Veterans Administration Hospital, Oklahoma City, Oklahoma.

**Postdoctoral Trainee in Cardiovascular Disease, Grant HTS-5406, National Heart Institute, U.S. Public Health Service.

azine combination was quite effective and resulted in as great a reduction of blood pressure as reserpine plus ganglion blocking agents in the severe groups with fewer disturbing side effects. In the moderately severe group, this combination reduced the average diastolic pressure to normal levels.⁹

With this good to excellent blood pressure reduction, it is interesting to note that the survival rates, calculated for the initial four years of the study, diminished from the mild to the severe groups but the survival rates for the randomly chosen placebo mild and moderate groups did not differ statistically from the treated groups. There was no placebo group for comparison with the severe group.

As in other studies, the severity of the disease did not increase with the length of time that the patient was observed to be hypertensive. The patient with mild hypertension remained mild and those with the severe form remained severe with or without therapy.¹⁰

The severe group appeared to be composed of two distinct patient types. One, the severe hypertensive person who progressively deteriorated and rapidly died despite antihypertensive therapy. The other presented with equally severe complications of renal damage, cardiac failure, or encephalopathy and survived at a rate similar to the moderately severe group.

The only demonstrable factor which separated these two subgroups of the severe group was the elevated blood urea nitrogen. When significant azotemia was present response to therapy was minimal and survival rate was considerably lower.

Other factors such as the amount of blood pressure reduction, age, serum cholesterol, and neurological symptoms held no apparent prognostic significance.

Roentgenographically cardiac enlargement, when present, correlated with the age of the patient but not with the severity of the hypertension.^{8, 9, 11}

Only tentative conclusions can be drawn from this study since it is not yet completed. It is possible that after eight or ten years of observation, significant differences in morbidity and mortality will be demonstrated in the placebo group compared with the treated groups, but after four years this

has not been observed to be statistically significant, although the treated moderately severe hypertensive patients have had a higher survival rate than the placebo group.

The question still unsettled is: Does reduction of blood pressure to normal or near normal levels arrest end-organ damage or alter the natural course of hypertension?

Consequently, the current rationale of antihypertensive therapy is based upon the opinion of clinicians who have studied hypertensive disease both before and after antihypertensive drugs became available. The majority express the opinion that blood pressure reduction prolongs life in accelerated forms of hypertension,² but there is no unanimity of opinion that it prolongs life or alters the course of the disease in the patient with mild hypertension.^{10, 12, 13, 4}

Scientific proof of the efficacy of current hypertensive therapy is lacking at the present time. The initiation of therapy for hypertensive patients, particularly mild cases, warrants consideration of this deficiency.

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921 N.E. 13th, Oklahoma City, Oklahoma

Committee Urges Proper Use of Kerr-Mills Act

Members of the Oklahoma State Medical Association are being cautioned by the OSMA Public Welfare Committee to make sure their actions do not contribute to any mis-use of public funds in connection with the health care programs of the Kerr-Mills Act.

A letter from the committee has been mailed to each county medical society president with the request that it be read to the county society membership.

The action of the committee was prompted by information that certain physicians and hospitals were showing unusually high admission rates and lengths-of-stay for elderly persons under the provisions of the Kerr-Mills programs.

Utilization Studied

Doctor E. M. Gullatt's Public Welfare Committee is now studying utilization records of the state's hospitals in an effort to determine if there are any areas of abuse.

"The OSMA's agreement with the Department of Public Welfare places the responsibility for policing the profession squarely in our own hands," Doctor Gullatt said, "and the committee feels that is where it should be."

"If there are any physicians who do not understand the philosophy and regulations governing the programs—or if there are physicians who are purposely exploiting the programs—then the OSMA must step in and correct the situations that exist," he reported for the committee.

Doctor Gullatt added that it will be to the profession's benefit to correct any such misunderstandings before they become public issues. "The state Legislature will be carefully evaluating the financial condition of the health care programs," he said,

"and it would be tragic if one or two cases of abuse were to blight the reputation of the entire profession, a profession which has done so much to provide high-quality health care for Oklahoma's indigent elderly at low-cost to the taxpayer."

Doctor Gullatt's committee will have little patience with any "witch-hunt" aimed at the profession as a whole. "Even before our study is complete," he said, "we are confident that the vast majority of Oklahoma physicians are using the Kerr-Mills programs as intended and many are doing so at a financial sacrifice to themselves, but the meritorious conduct of the majority does not relieve us from responsibility for the actions of any minority-offenders."

"Life-in-Danger" Defined

The old age assistance (OAA) and medical assistance for the aged programs (MAA) provide in-patient medical and hospital benefits for life-endangering or sight-endangering illnesses. Since a physician must justify each admission under the Kerr-Mills programs according to the definitions provided and since confusion may exist as to the nature of these definitions, they are reprinted below: *Life-Endangering and Sight-Endangering Hospital Care:* A life-endangering illness is that illness for which hospitalization is a definite requirement and for which out-patient care will not suffice or for which lack of hospitalization, in the judgment of the recipient's attending physician, would result in a reasonable chance of placing the recipient's life in jeopardy.

In addition, the program also includes treatment of those conditions which have produced blindness (including blind painful eyes), or which, if not corrected, will seriously impair sight.

Out-Patient Care

The Public Welfare Committee is also concerned about reported practices involving out-patient care under the provisions of the programs.

Physician's may be paid \$5.00 each for two visits per month to a nursing

home patient. However, it is to be understood that such visits are to be made on the basis of the patient's need, and should be made only by the patient's regular, attending physician. "In the committee's opinion, it is not the intent of this feature of the program to authorize a single physician to routinely appear twice a month at a nursing home and collect \$5.00 for every resident," Doctor Gullatt said. "If any physicians are following this practice, the Public Welfare Committee requests that it be discontinued immediately." □

Southwestern Surgical Congress Will Meet In Mexico City

For the first time, the Southwestern Surgical Congress will hold its annual meeting outside of the United States. Mexico City has been chosen as the site for the fifteenth meeting of the group, April 22-25th.

Headquarters for the convention will be Mexico City's newest hotel—the Maria Isabel. Special airline rates for the trip have been arranged with a choice of three all-expense tours. Reservations should be made through Rainbow Travel Service, 2817 Classen Boulevard, Oklahoma City.

Prominent guest speakers from the United States and Mexico will present papers on subjects pertinent to the fields of all attending physicians. At this time, the appearance of five speakers has been confirmed. They are:

George M. Fister, M.D., President of the American Medical Association; Rollins Hanlon, M.D., Professor and Chairman of the Department of Surgery, St. Louis University; Rupert Turnbull, M.D., the Cleveland Clinic; Francis Moore, M.D., Professor of Surgery, Harvard University; and, John C. Burch, M.D., Professor of Gynecology, Vanderbilt University.

A registration fee of \$10.00 for members and \$25.00 for non-members will be charged.

Special entertainment is being planned for wives of attending physicians. □

Tulsa Polio Clinics Successful

Tulsa County Medical Society's mass immunization program using Type 1 Sabin oral vaccine for poliomyelitis, held on Sunday, January 20 with a make-up clinic on Sunday, January 27, has been termed an unqualified success. The number of persons immunized was 267,000, or 75 per cent of the total population.

Clinics were located in 49 Tulsa schools—each under the direction of a member of the Tulsa County Medical Society. Staff for each clinic included a pharmacist, two or more nurses, 12 to 16 PTA workers as clerks, Civil Defense patrolmen, school officials and custodians, Boy Scouts and Tulsa police who helped in directing traffic and parking.

An intensive campaign utilizing all media of communication, including television, radio, daily and county newspapers, house organs, posters, billboards, personal appearances by physicians before all types of groups, pamphlets and flyers preceded the program. Success of the effort was credited to effective publicity and to the complete community cooperation and enthusiasm demonstrated by



Paul T. Strong, M.D., (center), physician-in-charge at the Horace Mann Elementary School clinic in Tulsa's mass immunization for polio, supervises administration of three drops of Sabin oral polio vaccine by registered nurses to tiny Martela Braucht. (January 27)

volunteer workers, of which there were more than 2,000 in all phases of the program.

Younger Group Responds

A high proportion of children and young adults, the group which is most susceptible to polio, was vaccinated. A breakdown, by groups, of the total receiving the vaccine follows:

97.7 per cent of school age children immunized (ages 6-19).

82.7 per cent of children one to five years of age immunized.

73.3 per cent of infants under one year immunized.

79.6 per cent of young adults 20 to 40 immunized.

51.3 per cent of persons over 40 immunized.

The over-all project was under the direction of Robert K. Endres, M.D. Members of the steering committee included Maxwell A. Johnson, M.D., John C. Kramer, M.D., C. Robert Cooke, M.D., V. William Woods, M.D., Charles J. Lilly, M.D., Paul A. Bischoff, M.D., Harold E. Goldman, M.D., Cecil F. Jacobs, M.D., and Earl E. Smith, Jr., M.D.

Additional Clinics Planned

Similar clinics to administer Type 111, Sabin vaccine will be held March 10 and March 17. Dates will be announced later to give the Type 111 vaccine. □

Three Tulsa physicians mark half-hour reports on vaccine supplies at the 49 clinics on a huge "tote board." Left to right: Earl E. Smith, Jr., M.D., Chairman of the Distribution Committee; Harlan Thomas, M.D., President, Tulsa County Medical Society; and, John C. Kramer, M.D., Chairman of the Manpower Committee.



Burton Named OSMA Candidate for AMA Post

John Flack Burton, M.D., Oklahoma City plastic surgeon, has been selected as the Oklahoma State Medical Association's nominee for a position on the Board of Trustees of the American Medical Association. The selection was made as a result of a recent referendum of the entire membership of the state association, to which 1,258 physicians replied.

In addition to Doctor Burton, the names of John E. McDonald, M.D., and Malcom E. Phelps, M.D., were on the referendum ballot. The ground rules for the referendum ballot were announced on November 18th at a special meeting of the OSMA House of Delegates which failed to materialize due to the lack of a quorum.

According to the rules, the ballot contained the names of the three aforementioned nominees as well as a provision for a write-in vote. The recipient of the plurality of the votes cast before December 16th was to be the OSMA candidate for the AMA post.

The ballots received at OSMA headquarters prior to the close of the referendum were counted and certified as correct by a referendum committee appointed by the president.

Larger AMA Board

At the June, 1962 meeting of the AMA House of Delegates, the report of an ad hoc committee was approved for implementation at the November, 1962 session of the House. The ad hoc committee, of which Doctor Phelps was a member, recommended the enlargement of the AMA Board of Trustees from eleven to fifteen members, and the shortening of the terms of office from five years to three years.

The effort to implement the expansion of the board was delayed in Los Angeles due to a voting technicality, but it is expected to receive approval at the opening session of the June, 1963 meeting in Atlantic City. Ex-

pansion of the board will pave the way for Doctor Burton's candidacy.

Well Qualified

As a candidate for the national honor, Doctor Burton is particularly well-qualified.

He has served Oklahoma as state association president and as both delegate and alternate delegate to the AMA. In 1956, he was elected to the Council on Medical Service of the AMA, and later in the year was named chairman of the council's Committee on Indigent Care. As committee chairman, he was appointed to the Medical Advisory Committee of the Department of Health, Education and Welfare's Bureau of Public Assistance, and has been active in the AMA's program for implementing the Kerr-Mills Act.

Doctor Burton was elected Chairman of the AMA Council on Medical Service in 1961, a position he holds at the present time. The council is

comprised of committees on Medical Facilities, Indigent Care, Maternal and Child Care, Federal Medical Services, Aging, and Insurance and Prepayment Plans.

Among other honors accorded him, Doctor Burton has been a member of the Tripartite Liaison Committee between the AMA, the American Hospital Association, and the American Nursing Home Association, a group concerned with institutional care of the chronically ill and aged.

Hat-in-the-Ring

The Oklahoma State Medical Association has written every member of the AMA House of Delegates announcing support for Doctor Burton's election to the Board of Trustees. □

Fourth Oklahoma Colloquy Announced

Topic of the Fourth Oklahoma Colloquy on Advances in Medicine will be Pulmonary Insufficiency. The three-day meeting will be held in the auditorium at the University of Oklahoma Medical Center on March 28, 29 and 30th.

Collaborating with the Department of Medicine and the division of Postgraduate Education at the OU Medical Center in developing the Colloquy were the Oklahoma Tuberculosis Association and the Oklahoma Thoracic Society.

Thirteen teachers and investigators from the United States, Canada and England will participate in the program. They are: Richard V. Ebert, M.D., Little Rock, Arkansas; Dickinson W. Richards, M.D., New York City; L. C. Scadding, M.D., London, England; James K. Alexander, M.D., Houston, Texas; Alfred P. Fishman, M.D., New York City; Hollis G. Boren, Houston, Texas; James F. Hammarsten, M.D., St. Paul, Minnesota; Vernon E. Krahle, M.D., Baltimore, Maryland; William F. Miller, M.D., Dallas, Texas; John A. Pierce, M.D., Little Rock, Arkansas; Bram Rose, M.D., Montreal, Canada; John Severinghaus, M.D., San Francisco, California; and, John P. Wyatt, M.D., St. Louis, Missouri. □

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Regional Postgraduate Courses Underway

Two of eight OSMA regional postgraduate education courses were presented in January and the balance will be completed February through April at the rate of two per month.

Under the direction of the Council on Professional Education, the four-hour programs are held at decentralized meeting sites across the state and, in a further effort to conserve physicians' time, they are scheduled in the late afternoon and evening.

The meetings begin at 4:30 p.m. with two hours of lecture, followed by dinner and another two hour period of lecture and discussion. Faculty members from the University of Oklahoma Medical Center make the scientific presentations.

Each program is approved for four hours credit (Category I) by the American Academy of General Practice. A registration fee of \$7.50 covers the complete scientific program as well as the dinner.

Four subjects—each concerned with a principal organ system—are presented twice during the eight program series. The educational treatment of the subjects includes basic science and clinical aspects of diseases affecting the organ system under consideration.

Popular Programs

1963 is the third year for the regional postgraduate education programs. The convenience and scientific merit of the meetings has been generally well-received throughout the OSMA membership. Attendance at the events averages over thirty physicians per meeting. Registration for the programs is handled by mail, with the OSMA Executive Office soliciting attendance from the physicians within a 50-60 mile radius of the meeting site.

Schedule of Meetings

Below is the complete schedule of regional postgraduate meetings for the winter and spring of 1963:

January 29—"The Pancreas"—Ponca City (Completed)

January 29—"The Heart"—McAlester (Completed)

February 19—"The Central Nervous System"—Lawton—Hotel Lawtonian

February 26—"The Liver"—Shawnee—Broadway Cafeteria

March 19—"The Heart"—Woodward—Palomino Restaurant

March 26—"The Liver"—Lake Texoma Lodge

April 16—"The Pancreas"—Clinton-Sherman AFB—Officers Club

April 23—"The Central Nervous System"—Stillwater—Chalet Restaurant □

Blue Cross-Blue Shield Expand Physician Service Department

In an effort to more thoroughly and frequently service physicians' offices and clinics throughout the state, a new Professional Relations representative has been appointed for Western Oklahoma. N. D. Helland, President, recently announced the appointment of Mr. L. R. (Randy) House to this post. The responsibility for servicing the offices throughout the entire state was formerly assumed by Mr. Carl Behle out of the Tulsa office. Behle will now service Eastern Oklahoma only. Mr. House will travel from the Oklahoma City branch office. He is uniquely prepared to be of service to paramedical personnel due to his six years experience in the Claims Department before his appointment to his new duties.

The function of the Plan's Professional Relations Department is to visit physicians' offices as frequently as possible and offer assistance to the medical assistant, insurance clerk, bookkeeper, or receptionist regarding Blue Cross or Blue Shield matters. Explanations of benefits, exclusions and enrollment regulations are offered. Behle and House also assist in filling out claim forms when necessary and attempt to keep the offices well stocked with the forms. Other supplies such as patient appointment cards and descriptive literature are available to all offices requesting them. □



LEON McAULIFF

McAuliff To Play for President's Inaugural

Leon McAuliff and His Cimarron Boys, ABC-Paramount recording artists, will provide the music for the President's Inaugural Dinner Dance of the Oklahoma State Medical Association on Saturday, May 4, 1963, at The Mayo, Tulsa.

The popular western musician and his group was selected after scoring a solid hit with Tulsa doctors two years ago. He plays all types of dance music—latin rhythms, the twist, waltzes, western—you name it, Leon plays it. He operates on the theory that when people come to a dance, they want to dance and not listen to overarranged melodies, so he and his boys put out completely danceable rhythms suited to every taste.

The Dinner Dance will be a feature of the OSMA Annual Meeting May 3-5, 1963, and will open with a social hour and reception. Dinner and inaugural ceremonies for incoming President Peter E. Russo, M.D., of Oklahoma City will follow, with dancing from 9:00 p.m. to 1:00 a.m. in the Crystal Ballroom of The Mayo. Tickets are \$7.50 per person and may be ordered in advance from: Convention Headquarters, Oklahoma State Medical Association, B9 Medical Arts Building, Tulsa.

Reservations for the convention may be made by writing directly to The Mayo. The Annual Golf Tournament will be held Friday, May 3, at Oaks Country Club. □

Highlights of Actions of the AMA House of Delegates

The following summary of the activities of the AMA House of Delegates meeting, November 25-28, 1962, is presented by Alternate Delegate Thomas C. Points, M.D., in behalf of the Oklahoma delegation to the AMA.

Remarks of the President

Doctor George M. Fister, President, reported on achievements in scientific, educational and legislative fields of medicine and should be read, but three statements are: (1) "Achievement and freedom are not unrelated, free men have the opportunity to develop this medical care system under a government and a constitution that encourage enterprise and industry. Men have been free to think, to work, to match their talents 'against the world.' (2) There can be no compromise on our basic principles, and there can be no alternatives. (3) The people will respond to the truth, and it is imperative that we as individuals and as an organization see that they get the truth."

AMA-ERF

Doctor McKeown — AMA-ERF report—amongst many other functions there had been 4,829 loans committed to the amount of \$9,148,923 with \$1,109,656 still available. The loans are guaranteed by AMA-ERF made by regular banks with ratio of \$12 for \$1 ERF back. Thus this money is doing 12 times the job and by free enterprise banks. Applications for loans are about 150 per week.

The President of Woman's Auxiliary, and President of Student A.M.A. also spoke.

The Annual reports of the Executive Staff of A.M.A., Board of Trustees, Councils and Committees were reported and printed in the J.A.M.A. of October 27, 1962 — p. 363-468.

All of these reports plus any supplement reports, special reports and resolutions introduced were referred to the Reference Committees of The House of Delegates. In turn they were reviewed minutely and most phases

were discussed and argued. The reference committees then reported the consensus of opinions to the second and final session of the House of Delegates for their approval or disapproval.

Reference Committee Reports

Herein reported are the highlights (but not all) of these actions. All of these were approved unanimously by the house unless otherwise stated.

Committee on Amendments to Constitution and Bylaws

1. Enlargement of Board of Trustees and shortening term of office of same: The vote was 130 for and 48 opposed with Oklahoma's two delegates voting for. However this required two-thirds majority of delegates registered and this was ruled to be 144 necessary. This was then made the first item of business at annual meeting in June, 1963. It will pass.

2. Rules of procedure by Judicial Council on disciplinary action against a member: These are quite detailed and thorough, but the most this council could do would be recommendation of suspension of a physician's A.M.A. membership.

3. Surgical Assistance Fee—Statement of Principles: In the main it stated every physician is expected to observe the principles of medical ethics, that every doctor engaged in the care of a patient is entitled compensation commensurate with value of said service and "It is ethically permissible in certain circumstances for a surgeon to engage other physicians to assist him in the performance of a surgical procedure and to pay a reasonable amount for such assistance, provided the nature of the financial arrangement is made known to the patient. This principle applies whether or not the assisting physician is the referring doctor."

Committee on Public Health and Occupational Health

1. Public Health in relation to private practice of medicine: a.

State and County Medical Societies should evaluate periodically their Public Health Departments' activities in terms of local health needs, programs and resources.

b. Public Health Departments should include at least the following basic services: vital statistics, public health education, environmental sanitation, public health laboratories (if private facilities are unavailable), prevention and control of communicable diseases, hygiene of maternity, infancy and childhood (if private facilities are unavailable). That the policy statement on public health services of the A.M.A. be as follows: "Public Health is the art and science of maintaining, protecting, and improving the health of the people through organized community efforts. It includes those arrangements whereby the community provides medical services for special groups of persons and is concerned with prevention or control of disease, with persons requiring hospitalization to protect the community and with the medically indigent.

"State and County Medical Societies should collaborate with the departments of public health in the interest of community health, always keeping in mind the need for a proper balance between local public health programs and the private practice of medicine."

2. Participation in World Health Organization Meetings (observers). That the A.M.A. participate in World Health organization by attendance at, and through membership in National Citizens Committee for W.H.O. This was referred to the Board of Trustees for further study and subsequent report to The House of Delegates.

Committee on Insurance and Medical Service

1. Interim Report of The Commission on the Cost of Medical Care: This is on page 377 of October 27, 1962 J.A.M.A.

2. Home and institutional care programs: This being implemented as a result of a resolution from California passed by A.M.A. House of Delegates June 1962 and is answering a need and will be heard more from in the

next few years. Liaison Committee with American Hospital Association and American Nursing Home Association concerning problems of institutional care of chronically ill and aged. Statement that "Chronological age is one of least dependable ways of measuring a person's well being," and "that study and impress the fallacy of mandatory retirement by chronical age in efforts to create a new climate of opportunity for the older worker."

3. Federal Medical Services: "The number of full-time faculty in medical schools who receive 50 per cent or more of their salary from federal grants is increasing steadily — from 13.4 per cent of the total in 1958-1959 to 17.8 per cent in 1960-1961.

"These are all indications of the pressure which is and can be brought to bear on the practice of medicine in this country through the use of federal funds for medical research.

"It is, therefore, the opinion of the Committee that the Association should seriously consider presenting testimony before Congress on research appropriations, rather than leaving such testimony to individual physicians from special-interest organizations who are, nevertheless, often believed by Congress to be spokesmen for the medical profession.

"—that the Association develop a roster of physicians, and authorities in the various fields of medical research, upon whom it could call for advice when testifying on the subject of medical research grants for highly technical projects.

"The question at issue here is not specific faults, or virtues, in these programs of National Institutes of Health grants as they exist, but whether we can allow them to continue to grow in strength and importance with no voice in their operation for the American medical profession. The Committee believes that this is the matter of immediate concern for the Association.

"—that the medical profession still firmly believes that the sole legitimate responsibility of the Veterans Administration medical and hospital program is the care of service-

connected conditions. While the present legal authorization for non-service connected care continues, the medical profession believes that priority in NSC care should be given to those veterans whose disability is financially catastrophic, rather than merely inconvenient.

"The Association has consistently held that the provision of care for non-service-connected disabilities is not the proper business of the VA."

As to Dependents' Medical Care Program at State level: "(1) That claims administration be in the hands of a medical-orientated agency.

"(2) That each Association retain in its own hands the function of receiving disputed claims."

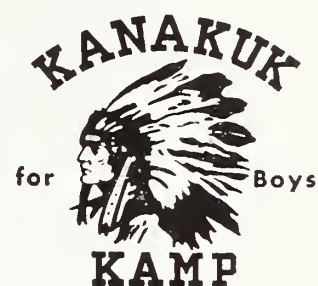
4. Indigent Care: "Determination of the amount of assistance to be granted should be based on a truly realistic assessment, regularly reviewed, of the minimum needs of the individual. When public funds appropriated to maintain the program are insufficient to allow payment of this amount, fiscal soundness should be maintained by prorated reduction of these grants, rather than by imposition of arbitrary ceilings."

5. Insurance and Medical Services: "That, where physicians forego payment from the welfare program, emphasis be placed on this decision as medicine's contribution to the initiation of the program. The Committee recommends that in these instances the state medical associations reserve the right to negotiate for payment later, on the basis of more experience or more adequate appropriations.

"Eligibility should be based on comparison of the individual's or family's resources and a reasonable estimate of the amount necessary for adequate maintenance of the necessities of life, including necessary medical care, with due regard to enabling the individual family to regain self-supporting status so far as possible, and that it is implicit in this policy that any 'relative responsibility' requirement be based on a realistic assessment of such relatives' own requirements, as well as their obligations to the aged applicant.

(Continued on Page 78)

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C. G. "SPIKE" WHITE
702 Thomas Lane
College Station, Texas

"That all state medical associations give serious consideration to the use of health insurance and prepayment in providing care for aged recipients of both Old Age Assistance and Medical Assistance for the Aged, and further recommends that these two facets of the Kerr-Mills programs be implemented as follows:

"(a) Purchase of adequate medical-surgical-hospital insurance for all Old Age Assistance recipients.

"(b) Assistance in the purchase of adequate medical-surgical hospital insurance, under Medical Assistance for the Aged, for those unable to meet the full cost.

"(c) Direct vendor payment for comparable medical - surgical - hospital services, under Medical Assistance for the Aged, for those aged not insured under (b)."

6. Medical Facilities: Policy of physician - hospital - relationship in view of trends in (1) location of physicians' offices in or adjacent to hospitals, (2) Hiring of salaried physicians by hospitals and, (3) Growing number of out-patient services provided by hospitals. This being studied and would welcome thought on these problems.

7. Resolution on Hill-Burton Grants for Diagnostic and Treatment Centers: "Have Hill-Burton law amended in such a manner as to eliminate the term 'diagnostic and/or treatment center' from any listing in the act and to prevent federal funds being awarded under existing law as a grant to closed-panel medical corporations to build diagnostic or treatment centers."

This was referred to the Board of Trustees for study and report appropriate recommendation to the House of Delegates in June 1963.

8. Resolution on Blue Shield Plan for Aged: Commended for developing and sponsoring this program and urged A.M.A. and all its components and/or component societies to aggressively and consistently promote the development of this program in their communities. This passed unanimously without any discussion on the floor

of the House.

9. Resolution on "Hospital Planning." "The constituent and/or component societies and individual physicians be encouraged to demonstrate cooperation and exert leadership in the formulation and operation of these regional hospital planning bodies."

Committee on Legislation and Public Relations

1. Liberty amendment: Referred to Council on Legislative activities.

2. Resolution on A.M.A. News releases: "No reports or proposals to be submitted to the House of Delegates be thus released and/or adjudged until the house has committed itself officially in connection therewith—this referred to the Committee on Communication for study and report."

3. Resolution on Freedom inherent in Profession of Medicine: "The House of Delegates invites attention to the fact that the medical profession is the only group which can render medical care under any system and that the medical profession is best qualified to determine how the best medical care can be delivered.

"The House of Delegates believes that the medical profession will see to it that every person receives the best available medical care regardless of his ability to pay, and it further believes that the profession will render that care according to the system it believes is in the public interest and that it will not be a willing party to implementing any system which is detrimental to the public welfare."

Committee on Medical Education and Hospitals

1. Compensation of Internes and Residents and Hospitals: This report was transmitted to The House for study and request for comment. They desire it to be reported and discussed at hospital staffs and medical society meetings and resulting comments be forwarded to the council of Medical Education and Hospital or Council on Medical Services promptly.

From the report:

"(1) Paying patients should be as-

signed to the house staff by the attending physician only with the knowledge and consent of the patients concerned.

"(2) When the house staff has assigned role in the medical care of paying patients, all applicable fees shall be collected and shall be deposited in a special fund.

"(3) The special fund shall be administered by a committee of the attending staff

"(4) The fund shall be used exclusively in support of intern and resident training programs, including salaries for house officers.

"(5) The fund shall not be used for support of the general operations of a hospital, medical school, university, or welfare department.

"(6) Compensation arising from this fund for any individual intern or resident shall not be related directly to fees collected for the services rendered by him."

2. Essentials of Acceptable School for Inhalation Therapy Technicians, Cytotechnology, Medical Technology, and Approved Residencies Pediatric Cardiology.

3. Internships and Hospital Services: "(a) At least 25 per cent of total house staff should be graduates of accredited United States or Canadian Medical Schools and if they fail to do this for two consecutive years will warrant serious consideration be given to disapproving the internship.

"(b) Council exert every influence so that all hospitals with approved House Officer training program accept a reasonable amount of graduates of foreign medical schools.

"(c) Study and definition of types of hospital service functions which may be performed under medical supervision by especially trained technical personnel. These to be authorized by House of Delegates."

4. Efficiency Study of Hospital Records: House instructed Joint Commission representative of these main recommendations:

"(a) Duplication of information on Medical record shall be avoided.

"(b) The decision on the form of the summary should be within the province of the medical staff. Detailed narrative summaries should not

be demanded if the remainder of the record meets minimal requirements and in such cases a short summary on dismissal on the progress note should be considered sufficient.

“(c) Progress notes should not be required daily. They should describe changes that occur. Satisfactorily, uneventful recovery does not call for the making of detailed progress notes.

“(d) A short form medical record may be used to hospital stays of ninety-six hours or less.” (This now is 48 hours.)

5. Committee to Study operation of Joint Commission on Accreditation: “This committee earnestly desires and seeks the profession’s suggestions and criticisms regarding the operation of the Joint Commission, not only overall, but from their own hospital’s inspectors and/or other inspectors.”

6. Indiana Resolutions: That two years in general practice be required before a physician be accepted for a residency in a speciality and he be given one year credit toward his residency requirement for these two years. This was referred to the council for study.

This council has many important and far reaching reports due at June 1963 meeting. They will be published before hand (in the main) in the J.A.M.A. It is earnestly hoped that the members will study these and express their views to the Delegates and Alternates so that their votes will more nearly represent the Oklahoma physicians’ desires.

Committee on Medical Military Affairs

“Utilization of mentally and physically qualified retired medical officers of the armed services in times of national emergency in order to spare equivalent number of civilian physicians.”

Committee on Miscellaneous Business

1. Pension Plan—Board authorized to investigate feasibility of such a plan and to report in June 1963 meeting.

2. A.M.A. Clinical Meeting—Feasibility study of regional clinical sessions and report June 1963. □

DEATHS

DAYTON M. ROSE, M.D.
1923-1962

A native of Shawnee, Oklahoma, Dayton M. Rose, M.D., Okemah physician, died December 26th, 1962.

After graduating from the University of Oklahoma School of Medicine in 1948, Doctor Rose served his internship at University Hospitals in Oklahoma City and then took a residency in general surgery at St. John’s Hospital in Tulsa.

Upon completion of his work in Tulsa, he established his private practice in Okemah. □

REUBEN ELLIS SAWYER, M.D.
1877-1963

Reuben Ellis Sawyer, M.D., Durant physician for over 50 years, died January 13, 1963.

Born in Cross Plains, Tennessee, in 1877, Doctor Sawyer graduated from Eclectic Medical College in Cincinnati, Ohio, in 1905. In 1907 he established his practice in Bokchito, Indian Territory. After two years, he came to Durant where he remained in practice until the time of his death.

Doctor Sawyer was active in both medical and civic affairs, having served as both county and city health officer. He was a member of the Southern Medical Association.

In appreciation for a half century of devotion to his profession, the Oklahoma State Medical Association

awarded Doctor Sawyer a Fifty-Year Pin in 1954. □

MILLARD L. HENRY, M.D.
1908-1963

Millard L. Henry, M.D., 54-year-old McAlester physician, died January 28, 1963.

Born December 5, 1908 in Little Rock, Arkansas, Doctor Henry graduated from the University of Arkansas School of Medicine in 1932. He established his practice in Heavener, Oklahoma, and remained there for ten years. During World War II he served three years as a Captain in the medical corps. In 1945, he entered practice in McAlester.

Doctor Henry was a member of the American Academy of Physicians and Surgeons. □

RICHARD A. HARKINS, M.D.
1914-1963

A 48-year-old McAlester physician, Richard A. Harkins, M.D., died in the crash of his plane on January 1, 1963 near McAlester.

A native of Massey, Oklahoma, Doctor Harkins graduated from the University of Arkansas School of Medicine in 1941. After serving his internship at the University Hospitals in Oklahoma City, he established his practice in Mountain Pine, Arkansas.

In 1946, he moved to McAlester to enter private practice. □

Oklahoma Hospitals Spend \$14 Million More in 1961

It cost Oklahoma hospitals 14 million dollars more to operate in 1961 than in 1960, The American Hospital Association reported recently. The cost was \$89,349,000 in 1961, compared with \$75,322,000 in 1960, for the 133 hospitals reporting. Nearly two-thirds of the costs in both years went for payroll; \$55.3 million in

1961; \$47.5 million in 1960.

Oklahoma hospitals also cared for a record number of patients—33,103—an increase of nearly 11 thousand over 1960, according to statistics which appeared in the annual Guide Issue of *Hospitals*, Journal of the American Hospital Association. The information was compiled from ques-

tionnaires sent to the 6,923 hospitals listed by the AHA.

In Oklahoma, the average cost to the hospital per patient day rose in all categories of hospitals in 1961, except for long-term general and other long-term specialized institutions. In the nonfederal short-term general hospitals (which admit 88.3 per cent of all patients), the cost was \$29.23, an increase of \$3.34 over the \$25.99 of 1960. This average included voluntary hospitals, \$30.89; proprietary, \$26.51 and state and local governmental, \$26.68. In the long-term nonfederal hospitals the average cost in the psychiatric institutions was \$3.89; tuberculosis, \$10.45; long-term general, \$16.08. The federal hospital average was \$31.68.

Commenting on the increasing costs in the national picture, Edwin L. Crosby, M.D., director of the American Hospital Association, said, "These varying costs reflect variations in intensity of care and in types of patients treated. The 8.5 per cent increase in expense per patient day in nonfederal short-term general hospitals is typical of the trend in recent years, with increases ranging between six and 9.5 per cent."

Patients in voluntary short-term general hospitals, the largest single category of hospitals, paid \$1.00 less in Oklahoma than it cost the hospitals to provide their care. The difference in the cost to the hospital and the payment by the patient is made up from contributions to the hospital, grants, endowment income, and other resources.

"Most of the increase results from rising labor costs, as salaries rise generally and as more highly skilled employees are needed to provide today's highly specialized care," Doctor Crosby said, adding: "Other factors influencing the rise are increasing research, education of health personnel, and rising equipment costs. Still another factor is the continually increasing number of visits to hospitals by outpatients, who are not counted in the number of inpatient admissions, but whose care adds to the expense of operating the hospital." □

BOOK REVIEWS

THE KIDNEY: AN OUTLINE OF NORMAL AND ABNORMAL STRUCTURE AND FUNCTION. Second Edition, H. E. de Wardener, M.D. 1961. Pp. 374, with 88 illustrations. Little, Brown, and Company, 34 Beacon Street, Boston. \$12.50.

The arrangement of this second edition, similar to the first, is excellent. Several sections have been completely revised. The book is nicely illustrated with charts and tasteful line drawings. A very selected, but often too concise, bibliography is given at the end of each chapter. The first ninety-one pages give a short description of normal kidney structure, physiology, and tests for functional integrity. Brief sections on counter - current mechanisms and the kidney's relation to erythropoiesis have been added to the second edition. The phylogenetic and embryological development of the kidney is omitted. Chapters which deal with routine methods for measuring renal function are especially worthwhile, however, this reviewer cannot recommend the Esbach technique (p. 30) to measure 24-hour protein excretion. Figure 5.7 (p. 41) beautifully demonstrates the relationship between specific gravity and osmolality of urines with varying concentrations of urea, glucose, and protein. The role of the kidney in hypertension, edema and in the maintenance of fluid and electrolyte integrity is followed by a discussion of the major syndromes which occur in renal disease (nephrotic syndrome, acute and chronic renal failure and acute nephritic syndrome).

The remainder of the book is a review of renal diseases, including the renal manifestations of some generalized diseases, discussed in terms of the patterns of functional disturbance. Schematic illustrations of typical renal pathology in these chapters clarify the text. The chapter concerned with polyuria is superb. A chapter on auto-immunity has been added and the sections on diabetic ne-

phropathy and glomerular nephritis have been profitably rewritten. The book concludes with appendices on recommended diets for patients with renal disease and tables of normal values.

No consideration is given to the use of renograms, to early post-injection films in intravenous pyelography or to interpretation of differential renal function studies in the evaluation of the hypertensive patient. On page 189 the author states, "—recurrent formation of renal calculi made of cystine which are translucent to x-rays." Dent has suggested that many of the stones in patients with cystinuria are radio-opaque due to the high concentration of sulfur in cystine (Brit. J. Urology 27:370, 1955).

Occasionally, the American reader may be unfamiliar with the British generic or trade names used. These are minor criticisms however, and the book is recommended to medical students and to physicians who are not specifically interested in the kidney. Those who specialize in the kidney-electrolyte field will find it rather sketchy in many parameters. —H. Earl Ginn, Jr., M.D.

DISEASES OF MUSCLE: A STUDY IN PATHOLOGY, 2nd edition, R. D. Adams, D. Denny-Brown and C. M. Pearson, Hoeber Medical Division, Harper and Row, Publishers, New York 16, New York, 1962, pp. 742, \$22.00.

If there have been technical reasons promoting the appearance of a second edition at this time, the authors consider them to be the increasing use of electron microscopy, specific histochemical methods and muscle biopsy. The major aim of this thorough treatise has been "to reach an integrated conception of the mechanism of the various affections of muscle." The pathologist will generally be satisfied with the details presented if he is making a search for background in a random disease. The clinician will be less satisfied, since it was the

book reviews

intention to present only enough clinical data to define the different entities. The reviewer checked especially on a few items of personal interest and did not find them inaccurate or particularly scanty. The work is modern and often masterful.

There are three main divisions. First, an adequate basic science background is presented in embryology, histology, physiology and biochemistry. Then follows general and experimental pathology of muscle. The greater part of the book is subsequently devoted to specific pathology: congenital diseases, dystrophies, atrophies, inflammations, trauma and tumors. A miscellaneous group of muscle diseases includes toxic, metabolic and endocrine injuries or defects. There are relatively short but useful sections on differential diagnosis and methods, including surprising details, in a book of this type, on the technique of biopsy, autopsy, histological preparation and common microscopic artefacts. It is the reviewer's feeling that, if an author deigns to include such material in a general work, he should take pains to make it more generally acceptable. If anything at all hinges on the biopsy, for example, then that section is not up to date and sometimes erroneous.

There are about 1500 references and 438 illustrations. The latter are generally excellent and many are original. Being all black-and-white, the only outstanding failure is the use of a well known illustration from Dempsey, which originally depended entirely on color differentiation of certain histochemical reactions.—*John W. Kelly, Ph.D.*

HENRY E. SIGERIST ON THE HISTORY OF MEDICINE, edited by Felix Marti-Ibanez, M.D. Publications, Inc., New York 22, New York, 1960, pp. 313, \$6.75.

A book of this type is more difficult to review than most others on scientific topics. The reviewer can say only that he enjoyed reading it (which was the case here) or he can report on major deficiencies. As in Osler's collection, *Aequanimitas*, there can be no objection to historical hiatuses, since this is a collection of essays. As Marti-Ibanez points out, Sigerist's whole life was devoted to writing a massive history of medicine. It was therefore no real tragedy that Sigerist never completed the specific encyclopedic history of medicine he was writing when he died in 1957. Even in the present volume there was no effort to make a consistent history but rather to select the best of a broad range of topics that had been processed through an active and responsive mind. The selection, incidentally, was made by Sigerist himself, not the editor. In the foreword by John F. Fulton, it is stated that "in Sigerist's hands the history of medicine thus became identified with humanism, albeit in somewhat unconventional form."

Topics range from the philosophy of hygiene to a Thanksgiving meal, from medieval bedside manner to American health spas, from Greek medicine to reading and writing habits of the modern physician, and from early gynecology to public health aspects of the Elizabethan water closet. It is visualized that most readers would want to read the entire book for informative pleasure. A smaller group might want to use it in preparation for writing or

lecturing (a lecture, for example, is defined). The smallest group would want to use it to fill in a gap in medical history, to obtain information on a single person (such as Welch or Hippocrates) or to obtain a pithy quotation.

In the reviewer's opinion, Sigerist was not the most powerful writer American medicine has produced nor the wittiest. His everlasting contribution was the formal establishment of the history of medicine as a discipline that helps to write the future of medicine itself.—*John W. Kelly, Ph.D.*

THE STRUCTURE AND FUNCTION OF THE SKIN, 2nd edition, William Montagna, Academic Press, New York 3, New York, 1962, pp. 356, \$16.50.

The second edition of this important volume is both larger and more comprehensive than its predecessor of 1956. The significant advances in the fields of histology, cytology, histochemistry and ultrastructure are all included in this well-written text. Each anatomical structure is viewed from the viewpoint of morphology and function and the result is a dynamic appraisal of the significance of each microscopically identifiable structure. Emphasis however is on structure, especially fine structure as defined by the electron microscope, and hence biochemical and physiological data are presented only where there are anatomical representations thereof. For example, there is nothing on Urticaria or the triple response except in reference to Urticaria pigmentosa, wherein aggregations of mast cells are seen, and histamine tissue levels are discussed only in relation to the mast cell. The importance of structure lies in what it reveals about function. Although

Roger Harrison Associates

Business Consultants to the Medical Profession

Classen Terrace Building

Phone JACKSON 4-1427

OKLAHOMA CITY 6, OKLAHOMA

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BOOK REVIEW

the function of structure is well covered, function without anatomical counterparts is not reviewed, i.e. itching. This book therefore supplements rather than replaces Rothman's monumental work, *Physiology and Biochemistry of the Skin*.

In this work, Professor Montagna revitalizes microscopic morphology and therein contributes a work of major importance to the basic library dealing with integumentary phenomena.—*Mark Allen Everett, M.D.*

STYLE MANUAL FOR BIOLOGICAL JOURNALS, prepared by the Committee on Form and Style of the Conference of Biological Editors, American Institute of Biological Sciences, Washington 6, D.C., 1960, pp. 92, \$3.00.

This small (92 pp.) book appears to touch upon nearly every technical item that the average author might want to know, especially during the actual writing of a journal article. It can only supplement the variable and highly specific instructions each journal provides for authors. This is especially true for medical writers, since few of the 78 well known journals which have adopted this manual are in the field of medicine itself.

The manual's own style is extremely concise, with a table of contents and index that make it easy to find a restricted topic. Interesting features are a list of journal abbreviations (adapted from *Chemical Abstracts*), general abbreviations and useful references on writing. A writer will find chapters on the writing process, preparation of copy, handling of manuscripts, editing, proofs and indexing. Since many authors eventually become referees, specific criteria are suggested for them, one of the best being "whether the reviewer would be willing to sign it (the critique)."

The manual belongs among other desk references and is especially recommended to graduate students or others just coming to grips with the writing process for "keeps," not merely for classroom themes or project reports.—*John W. Kelly, Ph.D.*

Miscellaneous Advertisements

G.P., 17 YEARS experience, with some training and special interest in surgery, desires to quit solo work and unite with associate or small group. Contact Key A, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

NEWLY REDECORATED office space near hospitals, 436 N.W. 13th Street, Oklahoma City. Telephone CE 5-6461 or JA 5-2008.

WANTED medical doctor, fine opportunity for general practice in central Oklahoma town, 10,000 population in Tulsa area. Near lake, new hospital, new nursing home. Contact Key C, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

PHYSICIAN, presently interning, desires Oklahoma location to establish private practice. Contact Earl B. Gehrt, M.D., Broadlawns Polk County Hospital, 18th and Hickman Road, Des Moines, Iowa.

BOARD ELIGIBLE (OB-GYN) physician desires group practice in city over 50,000. 1952 graduate of Harvard. Contact Ben Z. Taber, M.D., 4900 Marie Tobin, El Paso, Texas.

BOARD ELIGIBLE pediatrician, native Oklahoman, desires practice opportunity in state; available September 1, 1963. Contact J. P. Reimer, M.D., 4245 Mountain Village, Mountain Home AFB, Idaho.

CLINIC BUILDING, equipment and practice available for general practitioner in Okemah, Oklahoma. Father of deceased physician desires to make arrangement with interested party. Contact Oscar V. Rose, Box 5630, Midwest City, Oklahoma.

GP ASSOCIATE wanted in new clinic in Hollis, Oklahoma. Population 3,000. One block from new 31-bed hospital. Contact David Fried, M.D., Box 72, Hollis, Oklahoma.

EXCELLENT OPPORTUNITY in McAlester, Oklahoma, to take over lucrative practice of deceased physician. Equipment and office furnishings may be sold separately. Contact Presley Brown, L.L.B., 1st and Grand, McAlester. Ph. GA 3-0294.

WATONGA CLINIC, Watonga, Oklahoma (population 3,500) wants to add general practitioner to present four-physician group. Clinic building less than four years old. Guaranteed salary first year, with subsequent option to become partner. Cattle, agricultural economy. Large trade territory. Contact A. K. Cox, M.D.

FOR SALE: General practice office, fully equipped. One partner taking further training, the other retiring. Contact Agnew A. Walker, M.D., Wewoka, Okla.

FOR SALE: Ultrasonic machine, good condition, \$150.00. Curry Hospital & Clinic, Inc., Sapulpa, Oklahoma. Phone BA 4-3081.

Make Reservations	
N O W	
for	
OSMA ANNUAL MEETING	
May 3-5, 1963	Mayo Hotel
Tulsa, Oklahoma	
Reservations should be made directly to The Mayo, stating dates, time of arrival and departure, and type of accommodations desired. Early reservations are suggested, and all requests will be confirmed directly by the hotel.	

WHAT DO PEOPLE expect from their doctors these days?

Basically they expect nothing more than they ever did, namely treatment of illness, relief of suffering, wise counsel and help in the prevention of disease.

Although the human body has not changed, we recognize many more diseases than were known a hundred years ago and the improved treatments for them have multiplied fantastically. Thus there are more diseases to treat in more ways among people who live longer.

The horse and buggy doctor could carry most of the worthwhile medications in his little back bag on a house call. Besides his highly developed senses his only other diagnostic instruments were a stethoscope and occasionally a microscope. His modern counterpart however needs hospitals, nurses, skilled technicians, clinical laboratories, complex electronic gear and x-ray plus countless other facilities whose proper use permits increasingly precise diagnosis and successful treatment of more and more involved, delicate diseases.

No, the patients' fundamental desires and their bodies have not changed but the medical profession's fund of knowledge and skills have expanded beyond the wildest fancies of doctors practicing in 1860.

As a by-product of the growing complexity and diversity of medical knowledge specialization has become widespread. What single man can become competent in the management of a detached retina as well as occlusive renal artery disease, or a cerebellar tumor and mitral stenosis, or coronary artery disease and a cleft palate? Obviously the degree of skill and experience needed to treat every "modern" illness competently has grown beyond the limit of any one human's ability, in fact already groups or teams of various specialists are necessary to accomplish certain relatively standardized procedures.

Who can predict how far this trend will be carried by future discoveries? Somewhere along the way the law of diminishing returns will become active because there aren't enough men, money or materials in the coun-

try to allow a team of five doctors, six nurses and twenty technicians to devote their entire time to the treatment of individual patients with even a part of the illnesses that afflict humanity.

In the meantime, as the realm of medical science grows medical students often decide to specialize in some narrow field even before graduation; later they take a straight, non-rotating internship which is followed by a long period of residency training. Then after several years of practice in a limited sub-specialty it is no wonder that they cannot diagnose measles or deliver a baby. Is this doctor to be criticized for refusing to see any sudden illness at the request of distraught relatives who choose his name at random from the phone book? Certainly he should help the family to get competent medical assistance but our super-specialists are well aware of their inadequacies in general medicine as well as the liability potential inherent in ventures outside a particular field regardless of the goodness of their intentions.

The dedicated general practitioners, on whom has descended the mantle of the family doctor, are also aware of the liability problem especially when the result of treatment is unsatisfactory. What are the boundaries of "reasonable skill and judgment?" In the light of our present knowledge only a few of the many people who see their doctors with various aches and pains actually need referral to another doctor for consultation or treatment but those malcontents who eventually turn up with some unusual disease or an unforeseen complication are responsible for much needless concern and study among their more considerate fellow patients. The same is true for the hazard of house calls where continuous, skilled observation is impractical and it is impossible to carry out detailed clinical studies or systematic treatment. Nevertheless, the obliging doctor is liable for any oversight that may occur during his examination or care

of a patient in the home.

The telephone and the automobile have had their effect on modern medical practice too.

In the good old days, talking to the doctor required a personal visit either by the patient or a member of his family. Hitching up the horses and driving fifteen miles often through rain or snow was never undertaken lightly. As times have changed however the modern doctor is almost chained to his telephone. No time of the day or night regardless of weather is inappropriate for some people to call their doctors concerning anything. The problem may be trivial but if the doctor is asked for advice or remotely controlled treatment his anxiety and responsibility are as great as if he had actually examined the ailing patient. Considering the fact that some practicing physicians may receive twenty to thirty phone calls every day in addition to treating patients in the office and hospital it is not surprising to hear of an occasional call which was answered too briefly or too bluntly by a harried doctor. The nineteenth century physicians often needed to sit down for a leisurely chat with their patients whom they hadn't talked to for weeks whereas the modern doctor finds little reason to simply pass the time of day with people who have talked to him by phone on the same subject a dozen times the week before.

Automobiles likewise have accelerated the pace of medical practice. Gone is the time for thinking, contemplation or communion with nature that bygone doctors enjoyed while riding their buggies through the countryside. Modern practitioners speed through congested traffic areas where they are only minutes away from anywhere and such thinking as they have time to do in transit is usually concerned with the function of their car or the problems of its operation.

These are only a few of the factors which have influenced the character of medical practice since the days of Louis Pasteur and Joseph Lister and it is a tribute to the medical profession with its invaluable auxiliaries that people still confidently expect ever greater miracles from medicine. These

miracles may continue to be funneled through individual doctors to their patients or the trend toward specialization and division of responsibility may go on, no one can say.

Certainly when lay people regret the passing of the old family doctor with his little black bag they are unconsciously expressing resentment at the loss of the one-stop, one-man medical service when one call would do the job. Nowadays everything is faster, more efficient and streamlined, everything apparently except medicine which to the layman seems slower and more deliberate than ever before.

Neighbor Smith complains, "My doctor said he couldn't do anything for me at home, just had to see me in his office to do a lot of expensive tests. When he couldn't find out anything from his own examination he put me in the hospital for more tests and sent two other doctors in to see me. After three days they all decided I had a pathophysiologic musculoskeletal syndrome, gave me some aspirins and sent me home. What a rat race! It was different with good old Doc Jones at Bee Branch back when I was a kid. He'd take one look at your tongue and give you a box of calomel or a bottle of iron, quinine and strychnine. That's all there was to it and we nearly always got well."

Good old Doc Jones gave the citizens of Bee Branch the best of his medical skill, knowledge and understanding and his patients loved him for it. He had no reason to explain why he practiced medicine the way he did because the basic methods had not changed for centuries. Folks were accustomed to it. Today, although doctors themselves practice with no less sincerity or devotion than their predecessors, medical practice itself has changed so greatly from the nineteenth century pattern that many people resist the necessary adjustments. Much of their resentment can be resolved and perhaps the future course of medicine made a little smoother if we keep in mind the patients' concept of medical practice and try to explain some of the reasons behind our efforts while he is under our care. It takes no more time to practice the art along with the science of medicine.—C.B.D. □

Legal, Medical Organizations Compared

THE OKLAHOMA State Medical Association has in general tried to pattern its organizational structure after that of the American Medical Association. Thus previously designated major committees are now designated Councils, namely Public Policy, Insurance, Professional Education, Socio-Economic Activities and Public Health. Also, the formerly designated Councilors, two from each of fourteen districts in Oklahoma, are now termed Trustees and make up the Board of Trustees of the State organization.

Although the same in title this Board is quite different in make-up, size and function from the Board of Trustees of the American Medical Association. The AMA Board of Trustees is composed of eleven members of the Association, nine elected by the House of Delegates with the President and President-elect of the AMA rounding out the total. The Vice President, Speaker and Vice Speaker of the House of Delegates attend meetings but do not have a vote. (The make-up of the Board is expected to be increased to a total of 15 at the coming June meeting of the AMA.) Trustees serve for a term for five years and may not serve for more than two consecutive terms. This Board is truly the guiding hand of the AMA. It regulates the expenditure of all funds, determines editorial policies and appoints all editors for AMA publications, annually appoints the Secretary-Treasurer for the Association and designates who shall serve as Executive Vice President of the AMA. It meets annually in September and February and at the two annual sessions of the AMA. Special meetings may be called at any time by the chairman. This compact, readily assembled group does a remarkably efficient job of running an organization of more than 180,000 physician members.

The powerful Judicial Council of the AMA is a still smaller unit than the Board of Trustees. It consists of *five* members, each of whom serves a term of five years. Members are elected by the House of Delegates on nomination by the President. The terms are so arranged that at each annual session the term of one member expires. The ju-

dicial power of the AMA is vested in the Judicial Council. It has jurisdiction on all questions of medical ethics. Its decision is final in all controversies arising under the Constitution and Bylaws. It may investigate general professional conditions and all matters pertaining to the relations of physicians to one another or to the public. The Judicial Council may acquit, admonish, suspend or expel the accused in cases of unethical conduct which in the judgment of the Council are of greater than local concern.

Thus the Judicial Council actually has disciplinary powers for members of the American Medical Association. It must be recognized that a proceeding to discipline a professional man is not primarily for the purpose of punishing him but rather to determine his fitness to continue in practice. The primary consideration is the protection of the public. Membership in the profession is a privilege and is burdened with conditions; this privilege may be withdrawn when it is violated or when the conditions are broken. Disciplinary action in the State Medical Association and in the American Medical Association is considerably different in application than that of the legal profession, the profession most usually compared to the medical profession in operation of its constituent organizations.

Oklahoma is one of 26 states in which "the bar" is a state organization of all lawyers who have been admitted to practice. Lawyers in Oklahoma, as in the other comparable states, are admitted to practice by the Supreme Court in the state and are known collectively as "the bar." They are officers of the court and as such are part of the official state judiciary government. "The bar" has no official organization as such and carries out none of the activities usually conducted by comparable professional organizations such as our State Medical Association. "The bar" becomes integrated when in effect the State bar association is merged with the entire group of lawyers licensed in the state. The organization resulting from this amalgamation then is known as the State Bar of Oklahoma. Membership is mandatory for all attorneys who have been admitted to the practice of law.

There is no such integration of local medical societies, and in this connection it must

be recognized that there are approximately 250,000 medical doctors practicing in the United States while the AMA has only about 180,000 members. As pointed out in last month's article, only 13 State Medical Associations require membership in the AMA, and of course in no state is membership in any medical society required for a license to practice medicine.

It is thus clearly evident that disciplinary problems in the legal profession, at least in Oklahoma, can be handled forcefully and promptly. In Oklahoma the Board of Trustees (formerly the Council) incorporates among its other duties the functions of a Judicial Council, but obviously has disciplinary powers over members of the Oklahoma State Medical Association as to the degree of membership privileges only. It has no authority to suspend a man's license to practice.

The intriguing problem of the position of County and State Medical Associations in regard to local control of medical practice through hospital staff appointments will be the subject of a forthcoming article.—*Walter E. Brown, M.D.* □

Wake Up, Doctor!

THE DOCTORS of Oklahoma and the other forty-nine states are faced with a new program called Areawide Planning for Hospitals that they need to make a thorough study of before passing judgement on it. Let me suggest that you give this the best work-up of any topic that has come around your office in years. Take a thorough history of the subject and then strip the wrappings off of it and do a complete physical on it. While doing your bronchoscopic, sigmoidoscopic, and laboratory tests on this topic you will find some of the cells that will kill the private practice of medicine if left to grow, just as any cancer cell will kill a doctor if it is not stopped.

Areawide Planning for Hospitals was started by the American Hospital Association and the United States Public Health Service. They suggest that there be local planning agencies or councils for each region having substantial hospital planning

problems. These local planning agencies are to be developed so that eventually their areas will cover the whole nation.

Recently in Oklahoma City such a plan was put to work. Many prominent people lent their names and gave support to the work. However, just as the technical staff for developing the priorities under the Hill-Burton program have been members of the State Board of Health, a technical staff was arranged for in Oklahoma City consisting of eight members, and each one has some public health job over the country. Only three of the eight are medical doctors, and not one of them is in the private practice of medicine. This is not unusual, as in one area where a study was made, seventy-six organizations participated and not one medical organization was included.

The basic general plan behind the program is to develop a system of large teaching hospitals, as they follow the philosophy that only a large hospital can give good care. At first the whole system is voluntary, but after the plan has been adopted it is planned to enforce it with the necessary state laws. The laws have already been passed in Illinois and a couple of other states.

The eventuality of this plan is that there will be no hospital under three hundred beds, and people in the surrounding towns will have to travel "a reasonable distance" in order to get care at some hospital or clinic. The hospitals will be staffed with specialists who only work in the hospitals. Large outpatient clinics in each of the hospitals is also considered desirable. These of course will be in competition with doctors in private practice. In short, the program being started by Areawide Planning is a means of getting more government control of medicine. It still holds true that you can control the doctors if you control the hospitals.

In order to get communities and states to accept Areawide Planning, the U.S. and State Health Officers are promoting it by giving speeches and writing articles for publication. Local health department employees in Oklahoma are advocating such a planning system. When the time comes to ask for laws we can expect these officials will tell the legislatures that these laws are needed to control the building of hospitals, and to stop

(Continued on Page 121)



On Thursday February 21, 1963, President Kennedy delivered to the Congress of the United States his White House special message on aiding our senior citizens.

Having requested and received an original copy of this lengthy message, I have condensed the pertinent presidential recommendations so that they may be more readily assimilated by you, the busy doctors of our state.

It is recommended "that a hospital insurance program for senior citizens be enacted under the Social Security System, which will pay, (1) all costs of in-patient hospital service up to 90 days, with the patient paying \$10.00 a day for the first nine days and at least \$20.00, or, for those individuals who so elect, all such costs for up to 180 days with the patient paying the first two and one-half days of average costs, or all such costs for up to 45 days; (2) all costs of care in skilled nursing home facilities affiliated with hospitals for up to at least 180 days after transfer of the patient from a hospital; (3) all costs above the first \$20.00 for hospital out-patient diagnostic services; and (4) all costs of up to 240 home health-care visits in any one calendar year by community visiting nurses and physical therapists. Under this plan the individual will have the option of selecting the kind of insurance protection most consistent with his economic resources and his prospective health needs—45 days with no deductible, 90 days with maximum \$90.00 deductible, or 180 days paying a "deductible" equal to two and one-half days of average hospital costs.

"These benefits would be available to all aged Social Security and railroad retired beneficiaries with the costs paid from a new social insurance fund provided by adding one-quarter of one per cent to the payroll contribution made by both employers and employees and by increasing the annual earnings base from \$4,800 to \$5,200 each year. The cost of providing benefits for those who do not participate in the Social Security program would be paid from the general tax revenue.

"The program would pay the cost of hospital and related services but it would not interfere with the way treatment is provided. It would not hinder in any way the freedom of choice of doctor, hospital, or nurse. It would not specify in any way the kind of medical or health care or treatment to be provided by the doctor."

It must be pointed out that these recommendations cover some 16 legal-sized pages. Also it must be understood that the above are the *spoken* words of the President, despite the fact that they have in all probability been spoon-fed to him and his complete comprehension of their long range implication and practical application is highly questionable.

In the entire message no reference was made to the Kerr-Mills Act. It is obvious that the purpose of these recommendations is to bind politically the 17½ million people aged 65 and over. If the administration were really interested in the *health care* of this block of citizens they would be implementing and making every effort possible to utilize the maximum facilities available to these people under the Kerr-Mills Act.

Cordially yours,

J. Hoyle Carlock, M.D.

HEMODILUTION *for Body Perfusion*

NAZIH ZUHDI, M.D.
JOHN CAREY, M.D.
ALLEN GREER, M.D.

HELPED BY the emotional and psychological nuances relative to the human heart, the tendency to build complex heart-lung machines with multiple monitoring devices and safety measures has been present from the onset of experimentation in this field. Mechanical monsters were engineered to crumble under their thoughtless weights. The large blood requirements and the increasing number of personnel helped turn away from open heart surgery many an aspiring surgeon already dismayed by these paraphernalia. Lillehei and DeWall and their associates continued to voice their plea for simplification and common sense. Their efforts have led, among other notable achievements, to cross circulation,¹ the helical reservoir bubble oxygenator,² and the plastic

sheet oxygenator,³ superb examples of physiological and efficient simplicity. Finally, hemodilution^{4, 5} has solved many of the vexing problems of extracorporeal circulation and rendered total body perfusion within the realm of any community hospital that deals with major surgery.

As the number of physicians trained to perform this type of surgery is increasing, and the large medical centers are unable to contain them all, it becomes inevitable that smaller hospitals have to carry their share of this endeavor. The patient, the physician and the hospital are fast learning that open heart surgery is nothing but another form of everyday major surgery and that the financial investments are not prohibitive. In a random series of ten consecutive admissions for each, the average hospital stay in our institution of a patient undergoing open heart surgery was 11 days, less than the average hospital stay of a patient having cholecystectomy (12 days), craniotomy (13.5 days), or subtotal gastrectomy (16 days).

THE BASIC PRINCIPLES OF THE SIMPLIFIED BODY PERFUSION

"It is harder to unteach than to teach"

1. *Moderate Internal Hypothermia:*

After the initial work of Giaja⁶ (1940), Juvenelle⁷ (1951), Gollan *et al*⁸ (1953), Lewis *et al* (1954), Sealy *et al*⁹ (1959), and Drew *et al*¹⁰ (1959), other investigators demonstrated that the body temperature could be reduced to levels associated with cardiac arrest and rewarmed with survival in animals and human beings. However, the effects of hypothermic perfusion at temperatures below 20C are not entirely understood. There appears intravascular agglutination, disturbances of enzymatic and active transport processes and the continuing slow metabolism requires larger flows than those predicted.^{11, 98} In addition, Pollard *et al*¹² demonstrated the possibility of focal destruction of the blood-brain barrier as evaluated with circulating fluorescein,¹³ and Bjork *et al*¹⁴ advocated a re-evaluation of deep hypothermia by extracorporeal cooling because severe brain damage was encountered both of the diffuse type and of the localized form, mainly in the globus pallidus, cortex, and thalamus. Deep hypothermia is not necessary for present day open heart surgery and seems to be more a physiologic exercise and a test of human tolerance.

Moderate internal hypothermia from 25C to 30C as measured in the mid-esophagus seems to afford all the advantages of decreased metabolism of the vital organs without offsetting severely the basic physiological parameters of the human body. Essentially, moderate internal hypothermia permits safe reduction of metabolic and oxygen requirements, not associated with the limitation of external hypothermia, profound hypothermia, or perfusion alone. Gollan *et al*⁸ (1952), Sealy *et al*¹⁵ (1958), Zuhdi *et al*¹⁶ (1959), Gerbode *et al*¹⁷ (1959), and DeWall and Lillehei¹⁸ (1961) are among those who pointed out the safety of combining moderate internal hypothermia and total body perfusion. Oxygen consumption varies in the different parts of the body because of the wide range of tissue temperatures induced by blood cooling. But, as the oxygen dissociation curve is shifted only slightly to the left in this range of temperature, oxygen

is available for use at different rates by the different organs. The availability of oxygen is clearly shown by the fact that in a series of 14 consecutive patients having hemodilution perfusion, we found that the average maximum arteriovenous difference was 9.8 volumes per cent at flow rates of 20 ml per kilogram of body weight per minute. DeWall and Lillehei¹⁸ found the average maximum arteriovenous oxygen difference to be 7.1 volumes per cent during hemodilution perfusion at 30 ml per kilogram of body weight per minute. In addition, there is no evidence of deficient oxygen utilization during moderate hypothermia. The absence of tissue anoxia is further evidenced by the relatively slight accumulation of excess lactic acid, a valid representation of the metabolic response of the patient to hypoxia.²⁰ In 31 patients, DeWall and Lillehei¹⁸ found that it averaged 2.99 millimols per liter and readily reversed after the end of the hemodilution perfusion.

We can find no disadvantage to moderate internal hypothermia. It is a useful but not essential modality. It slows the "tempo" and the consequent low flow rates mean a slower blood turnover per minute. The subsequent decreased trauma permits a safe perfusion of longer duration than it would be with normothermia.

2. *Low Flow Rates:*

We have used clinically 20 ml per kilogram of body weight per minute in conjunction with moderate internal hypothermia since May 29, 1959,¹⁶ and we have not exceeded 1500 ml per minute for patients weighing more than 75 kilograms. These flows are in the range of adequate perfusion rates as calculated by Gollan²¹ (figure 1), and are not changed during the period of cardiopulmonary bypass. Perfusion is partial during the cooling and warming phases and total only below 30C as measured in the mid-esophagus.

No objective evidence has convinced us that we ought to increase our flow rates. Clinical response and survival are the best retrospective criteria for a successful total body perfusion. Even though direct arterial blood pressure, electroencephalographic data, and the oxygen saturation of the peripheral blood have been continuously monitored during the early perfusions, the only informa-

tion gained is that 20 ml per kilogram of body weight per minute maintain these at adequate levels.²² We have continuously recorded the electroencephalogram in eleven patients and in none we found the changes described by Hodges *et al.*⁹⁶ In all these patients, the electroencephalogram remained satisfactorily active and followed a pattern similar to the one we reported earlier.¹⁶ Immediate awakening and excellent clinical response indicate the safety of these low flow rates at intraesophageal temperatures varying from 25C to 30C. These rates of flow have proved adequate to warm the body and maintain oxygenation of the tissues while the injured cold heart is gaining strength and warmth immediately following corrective surgery.

No elaborate tests of renal function have been performed. The output of urine, as measured with an indwelling bladder catheter, during the perfusion of 45 patients without the use of hemodilution, between May 29, 1959 and February 25, 1960, varied

from five to 50 cubic centimeters. The output for the first 24 hours ranged from 285 to 1150 cubic centimeters, with a fluid intake of two cubic centimeters per kilogram of body weight per hour. The specific gravity showed no constant relation to volume. The only gross change was the precipitation of amorphous urates in some cases. Microscopically, there were transient changes, which included hematuria (85 per cent), albuminuria (85 per cent), and glycosuria (40 per cent). They were mild in about 60 per cent of the cases, and in all cases there was reversion to normal within one to three days. The response to mercurial and other diuretics in the postoperative period was apparently normal.^{4, 30}

The significance of acid base balance and changes in plasma bicarbonate during internal hypothermia are open to question because the factors needed for their calculation are difficult to control. There is lack of equilibrium of the different parts of the body and there is a difference in the temperature at the beginning and at the end of the perfusion. We usually end the cardiopulmonary

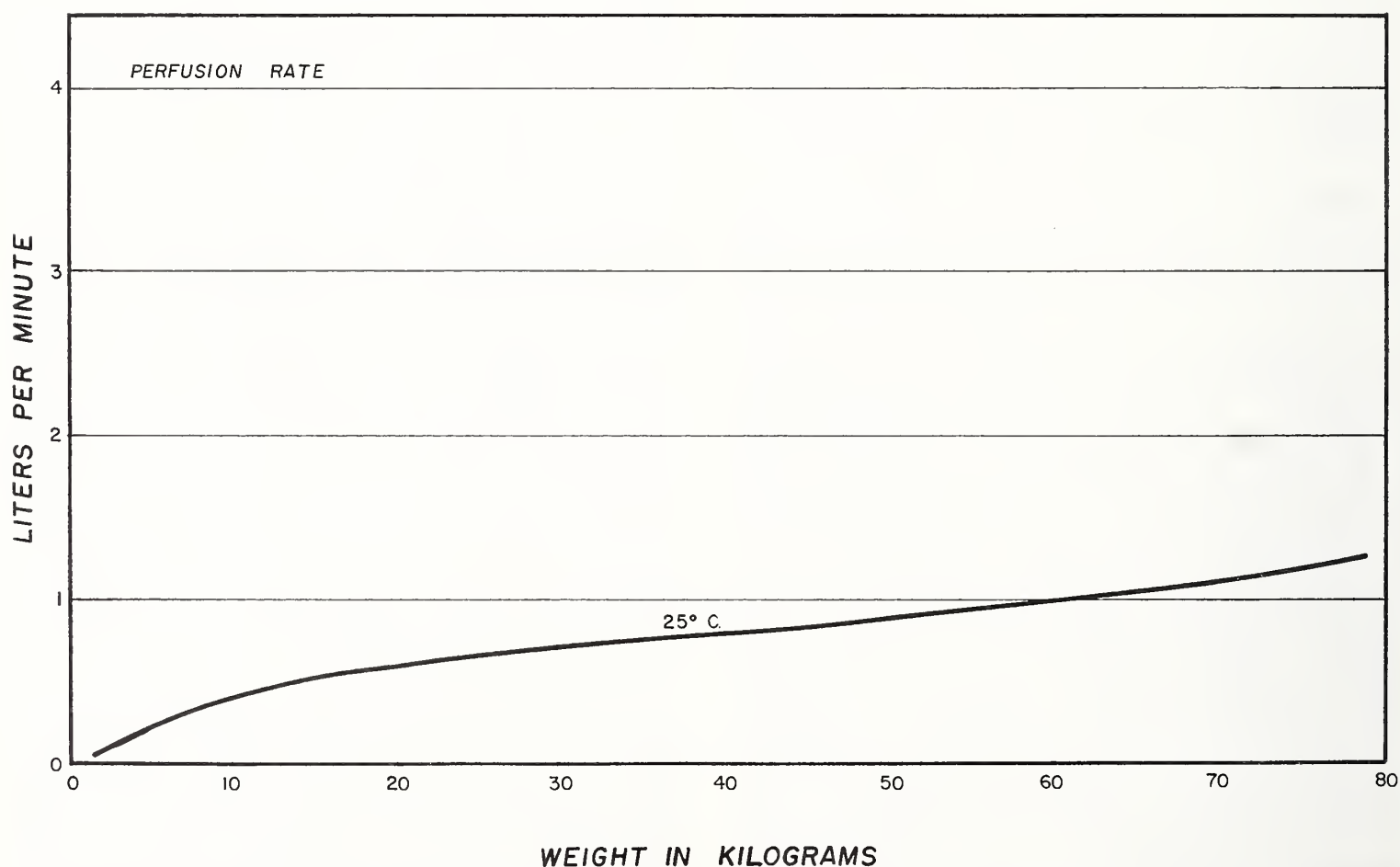


Figure 1. Flow rates in liters per minute as calculated by Gollan.²¹ We have successfully used twenty cubic centimeters per kilogram of body weight per minute in more than 250 cases of cardiopulmonary bypass for open heart surgery, 1500 ml per minute being the maximum flow for patients weighing more than 75 kilograms. The largest adult weighed 92.1 kilograms.

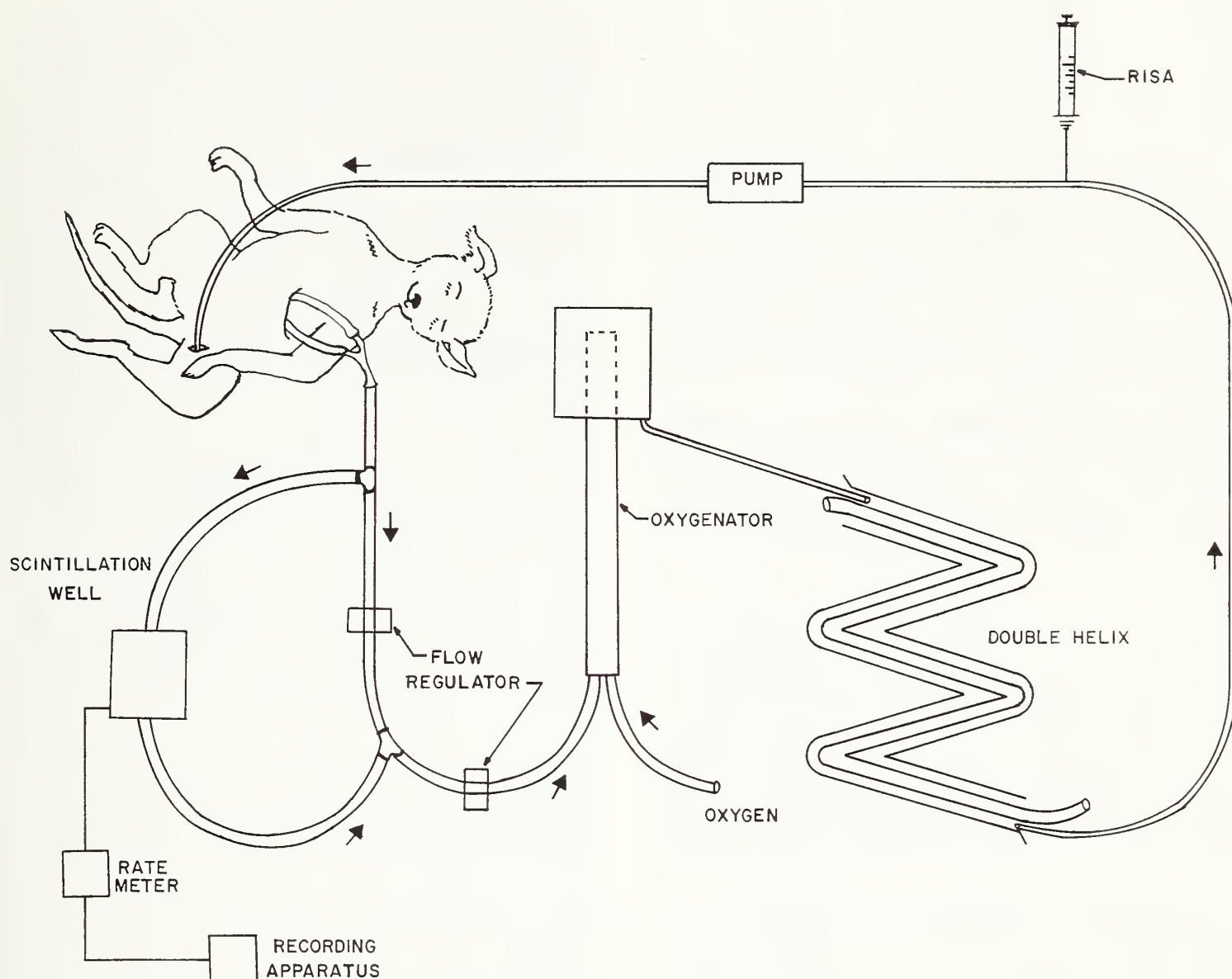


Figure 2. Experiment to determine the fate of the five per cent dextrose in water prime of the heart-lung machine during cardiopulmonary bypass.

bypass at around 33C. However, in order to conform to the present trend of learnedly quoting figures we understand little about, we calculated plasma bicarbonate concentrations in blood corrected to a pH of 7.4, by the use of the Peters and Van Slyke formula,²³ prior to and at the end of total body hemodilution perfusion in 14 patients. The average base deficit was 3.42 milliequivalents per liter, the range being from +0.27 to -8.79. We made no attempt to correct this deficit and it did not seem to correlate with the clinical course. Both the patient of DeWall and Lillehei with an 11.5 millimols per liter deficit and our patient with an 8.79 milliequivalents per liter deficit did well clinically. Sautter²⁴ and Holiday *et al*²⁵ reported similar results. This metabolic acidosis may be a good thing, even though of minor importance, as it tends to bring back the oxygen dissociation curve to the right and thus make more oxygen avail-

able. During perfusion hypothermia and flow rates of varying magnitude, a loss of buffer base of 2.5 to six milliequivalents per liter,²⁶ of 3.6 milliequivalents per liter,²⁷ and of 4.3 milliequivalents per liter²⁸ were reported. Starr²⁹ observed a fall of buffer base of 2.03 milliequivalents per liter at basal flow rates and normothermia. It thus appears that the changes in plasma bicarbonate using low flow rates in conjunction with moderate internal hypothermia and hemodilution are in the range of those reported in other types of perfusion with higher flow rates.¹⁸

3. Hemodilution:

Hemodilution by using complete five per cent dextrose in water primes was clinically initiated by us on February 25, 1960.³³ Extensive animal experimentation prior to this was carried out in our laboratories to define, formulate and establish the principle of complete primes of the heart-lung machines with

blood substitutes leading to true hemodilution.

The decreased viscosity of blood and decreased sludging permits better capillary perfusion and probably better tissue oxygenation. In addition, it does away with the use of large amounts of blood with a reduction in anaphylactoid responses, acidosis, major and minor blood incompatibilities and other complications.

Experimental studies to evaluate the fate of moderate to large volumes of five per cent dextrose in water added to the circulating blood volume through the perfusion system were carried out and will be discussed briefly.

Seven adult mongrel dogs weighing between ten and 16 kilograms were anesthetized with sodium pentothal and connections were made through cannulae in the femoral artery and in the venae cavae to the double helical reservoir pump oxygenator. The priming volume of five per cent dextrose in water is equivalent to the estimated eight

hour fluid requirement. It is determined by one-third of the formula: kilograms of body weight x two ml x 24 hours. This means a reservoir to flow per minute ratio of 0.8. A side limb on the venous side passes through a scintillation well connected to a rate meter and recording apparatus (figure 2), flow valves being attached to the venous lead to allow adequate circulation through the well. Ten microcuries of radioactive iodinated serum albumin were given from ten to 15 minutes prior to perfusion for controlled background counts. Ten microcuries were added periodically during the experiment, both to establish adequacy of flow through the recording apparatus and to increase the sensitivity of the system. Alterations of circulating blood volume greater than five per cent are detectable by this method, using sufficient RISA to give counts in the range of 10,000 per minute.³⁴ The duration of perfusions were from 34 to 74 minutes, with an average time of 50 minutes. Temperatures ranged from 92F to 96F, as measured in the mid esophagus. Hemoglobin and hematocrit determinations were carried

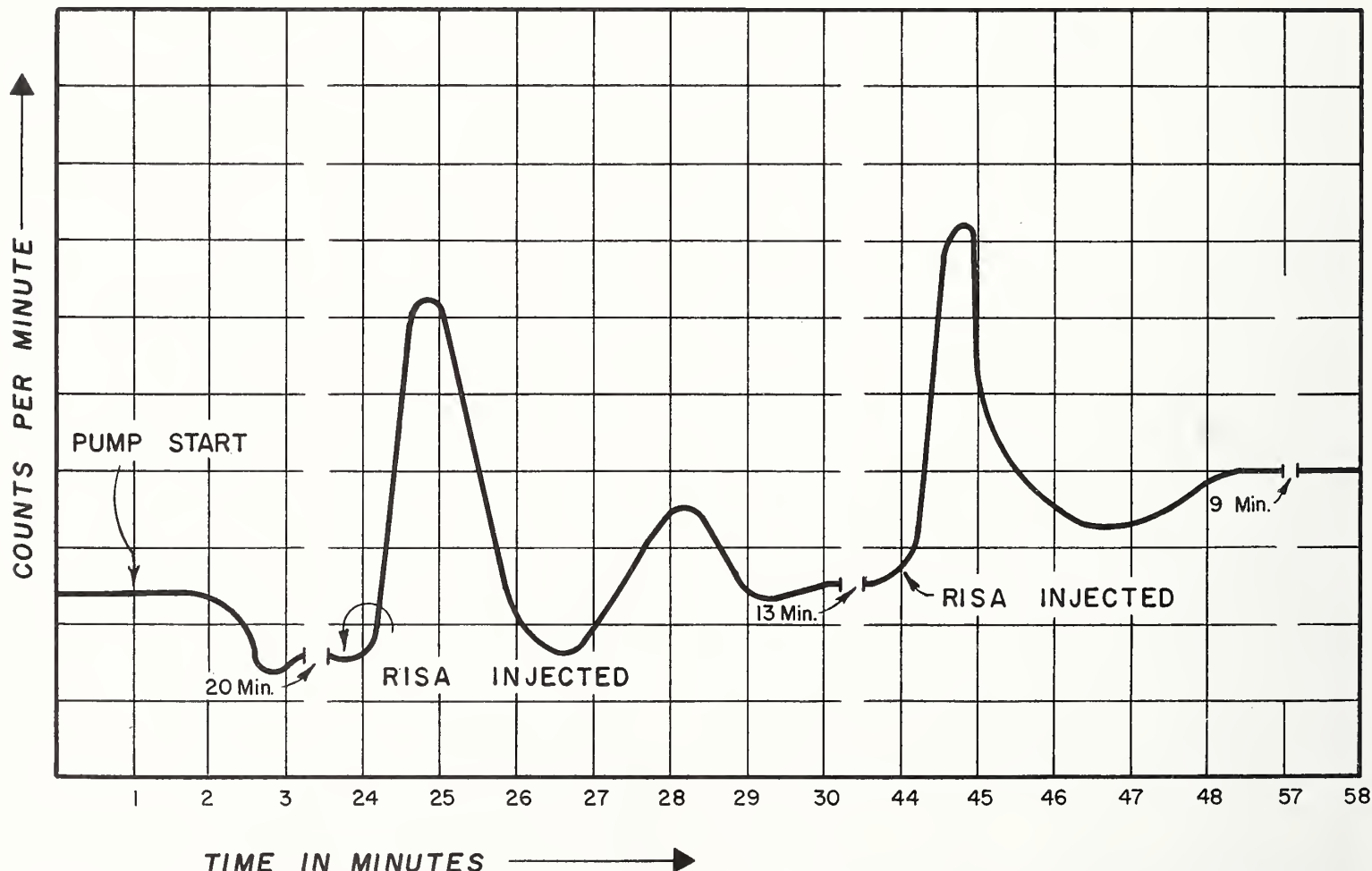


Figure 3. Original hemodilution is maintained during the period of cardiopulmonary bypass. This is ascertained by additional injections of radioactive iodinated albumin. Calculated rise in counts corresponds to recorded level of radioactivity. Alterations greater than five per cent are detected by this technique.

out at various periods during perfusion. Within 30 to 60 seconds after initiating partial cardiopulmonary bypass, there is a decrease of the baseline radioactivity. This is due to the admixture of priming fluid in the extracorporeal circuit with the circulating blood volume of the animal. Equilibrium at this level is established within three minutes. Constancy of the volume of dextrose in water and blood admixture during the experiment is suggested by the stable level of radioactivity. Increments of RISA raise the total amount of circulating radioactivity after an initial dye dilution type curve to a higher stable plateau (figure 3). This corresponds to the estimated level with a constant circulating volume in composition. Two experiments were conducted with 1000 ml in the extracorporeal circuit, about three times the calculated priming volume. The composition of total circulating fluid again remained constant once perfusion was started.

It appears that the dextrose solution is not metabolized, excreted, or otherwise removed in appreciable amounts from the circulating system, and thus true hemodilution occurs. Pooling or sequestration of blood in the animal cannot be demonstrated. Hematocrit determinations taken during these experiments confirmed simple hemodilution. Thus, for a 14 kilogram splenectomized animal in which 1000 ml of five per cent dextrose in water was used as a priming volume, the hematocrit fell from 26 to 18, once equilibrium had been established. This priming fluid rapidly disappears after the end of the perfusion. In a series of 76 patients, varying in weight from 8.9 kilograms to 77.3 kilograms, with a perfusion time varying from 23 minutes to 189 minutes, we found an average difference in the perfusion and post-perfusion hematocrits of -2 , the range being from -11 to $+8$.³⁵

Hematuria is considered by some investigators as one of the important problems associated with perfusion.³¹ Karlson and Stuckey³¹ have observed hematuria in all of their patients and animals after they have been on partial cardiopulmonary bypass for one hour or longer. Heparinization was maintained above 60 gamma per ml (approximately 3 mgs. per kilogram of body weight), as determined by repeated prota-

mine titrations. They found embolic material in the renal arterioles, interpreted as representing fibrin, only in those animals which were sacrificed within 24 hours following perfusion. It was found whether antifoam was used or not. Senning *et al*³² found that precipitation of blood elements and uncontrollable postoperative bleeding appeared more frequently with heparin levels of less than 3.5 milligrams per kilogram of body weight. Finsterbusch *et al*³⁶ have demonstrated that post-perfusion changes in renal arteriograms could be lessened and delayed by the use of a low molecular weight dextran for priming the oxygenator. From their work and that of Gelin,³⁷ they suggest that arterial spasm and intravenous aggregation of blood cells leading to tissue hypoxia may be the explanation of some cases of postoperative oliguria or anuria.

We have performed one hour long hemodilution perfusions on ten adult dogs using our system.⁴⁴ Five dogs received 2.5 milligrams of heparin per kilogram of body weight intravenously prior to cannulations and five dogs received four milligrams. At the termination of perfusion, heparin was counteracted with polybrene, one milligram for one milligram. All ten dogs were sacrificed twelve hours following the end of the perfusions. The detailed findings will be reported elsewhere.⁹⁶ The embolic material described by Karlson and Stuckey³¹ were not noted in the renal arterioles in either series. It is obvious that hemodilution rather than the degree of heparinization is responsible for this. DeWall and Lillehei¹⁸ state that when patients were perfused at the rate of 30 ml. per kilogram of body weight using five per cent dextrose in water hemodilution and three milligrams of heparin per kilogram of body weight, postoperative hematuria is apparent in none of these. In our patients, hematuria is minimal, of a microscopic nature and reversible. It does not seem to bear any relationship to the degree of heparinization. As our random series enlarges, further clarification of this point will be brought forth. We had no cases of renal shutdown and Reiser⁹⁷ states that he has not as yet encountered a patient with renal shutdown from hemodilution perfusion with five per cent dextrose in water, whereas he did when blood or dextran-blood were used

for priming.

Long *et al*³⁸ advocated the use of low molecular weight dextran in order to prevent sludging of blood as seen by cinemicroscopy during total body perfusion. Conversely, a more thorough organ perfusion may be permitted by hemodilution, particularly during hypothermia, which predisposes to increased blood viscosity and capillary stagnation. The combination of blood and dextran gives a higher viscosity than either alone.¹⁸ However, Bernstein³⁹ believes there may be a decrease in viscosity once the mixture has passed through an animal or patient.¹⁸ Reemtsma and Creech⁹⁴ believe that even though low molecular weight dextran in six per cent solution is more viscous than plasma, it may lower the apparent viscosity of whole blood by lowering the hematocrit level. Patients have a smaller urine output during the first 24 hours following dextran-blood mixture priming of the heart-lung machine than following complete five per cent dextrose in water priming.⁴⁰ We as yet fail to grasp the subtleties of using solutions different than five per cent dextrose in water for complete priming of the heart-lung machines. It is easily available, of simple composition, extensively studied, has no "holding characteristic"⁴⁰ and may have some protective action on the myocardium.

Five per cent dextrose in water is slightly hypotonic with regard to the red cells. The volume of red cells containing one gram of hemoglobin increases as the percentage of whole blood to five per cent dextrose in water decreases (figure 4). However, it is

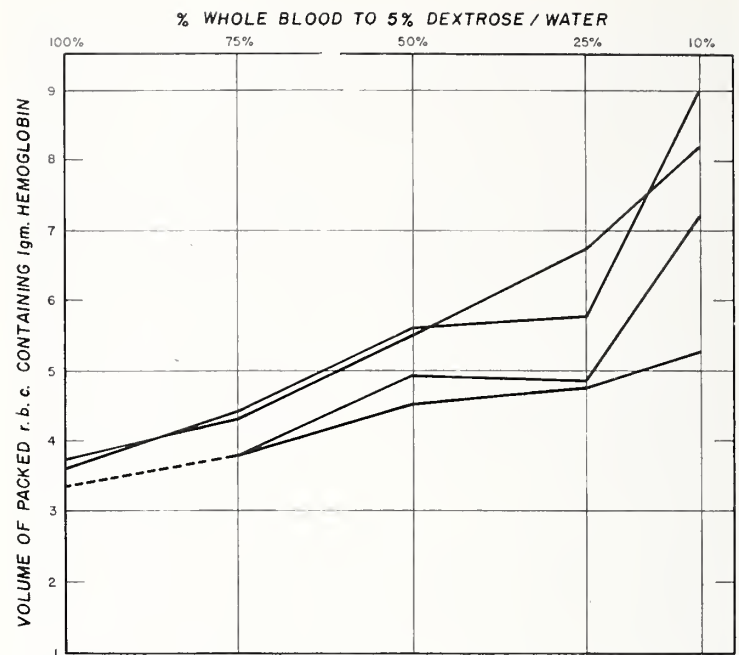


Figure 4. Degree of increase in size of blood elements due to the fact that five per cent dextrose in water is hypotonic. In our range of hemodilution, less than 25 per cent, this is small. A 5.94 per cent dextrose in water solution may be preferable.

apparent that the increase is small in the range of the degree of hemodilution we induce. We determined mechanical fragility before and after perfusion using a standard trauma test* in four patients, and using the agitation technique⁴² in one patient. The average rise in plasma hemoglobin following the mechanical fragility test was 22.1 milligrams per cent (table 1). Following an average perfusion of 60 minutes, we found that the average rise in plasma hemoglobin in 33 patients was 13.9 milligrams per cent.³⁵

Exposed to one hour perfusion with this system, the life of a red blood cell of a dog

*Recirculation of a certain amount of blood through a pre-determined length of polyethylene tube of five mm. I.D. using a sigmamotor pump with two cycles per second for five minutes.⁴¹

HYPOTHERMIC PERFUSION WITH HEMODILUTION OSMOTIC AND MECHANICAL FRAGILITY STUDIES

Patient	Specimen	%	Osmotic Fragility				Mechanical Fragility		
			0.85	0.45	0.30	0.00	Base	After standard trauma	Change
J.G.	Before perfusion	% hemolysis	0	3.7	92.5	100	17.9	65.9	48
	After "	"	0	3.1	90.7	100	25.6	83.9	68
D.J.	Before perfusion	"	0	2.7	93.3	100	8.6	40.3	32
	After "	"	0	2.3	93.7	100	19.9	57.8	38
J.M.	Before perfusion	"	0	3.2	95.0	100	11.7	89.2	77
	After "	"	0	3.8	97.5	100	25.6	123.6	98
P.W.	Before perfusion	"	0	3.6	96.2	100	12.6	98.0	85
	After "	"	0	3.9	95.3	100	19.8	159.6	148
J.W.*	Before perfusion	"	0	3.7	97.6	100		75.6	
	After "	"	0	2.1	96.3	100		76.1	

*Performed by the agitation technique. All others by the standard trauma method.⁴¹

TABLE 1

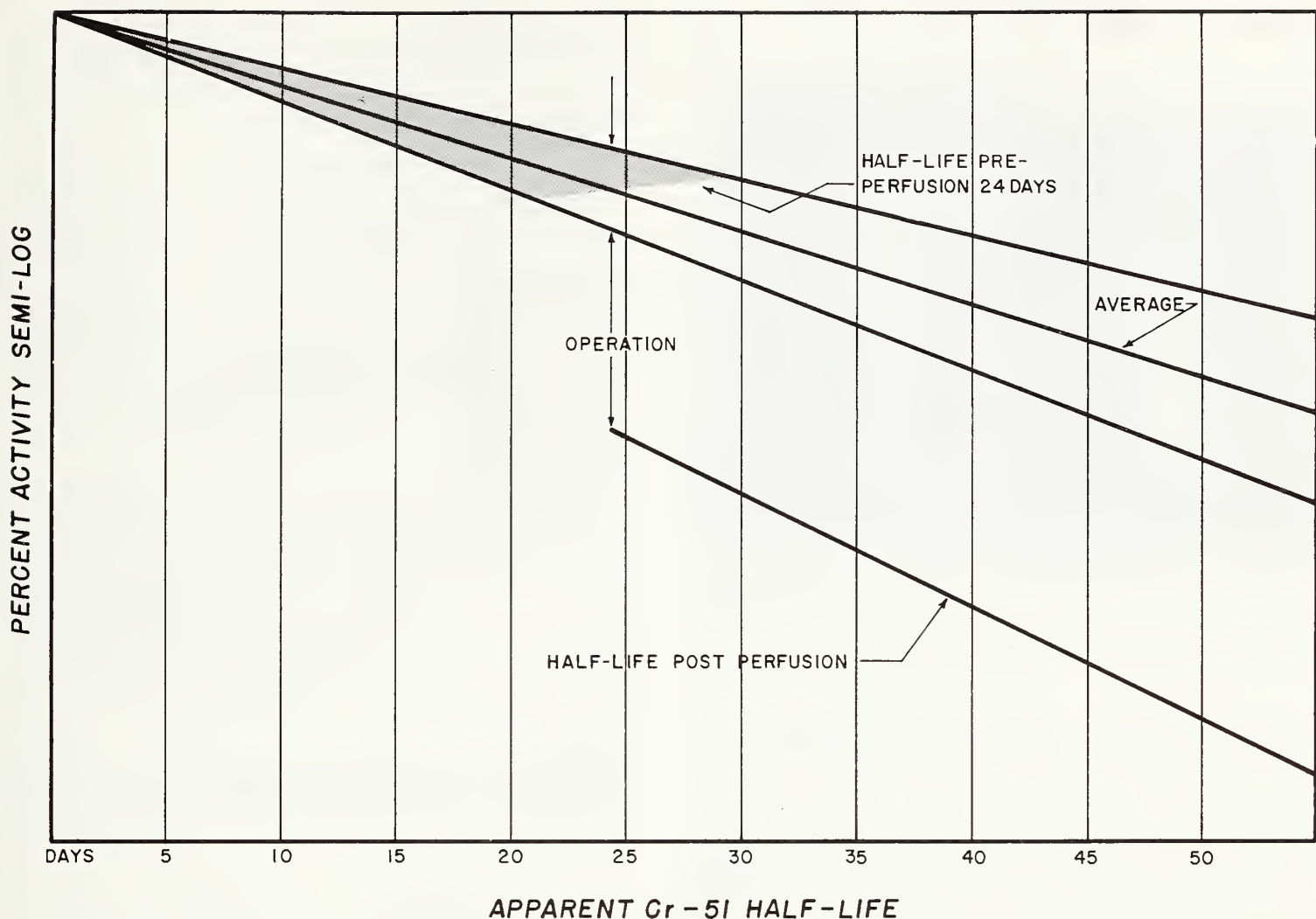


Figure 5. The decrease in the half-life of a red blood cell of a dog is measured with the apparent chromium 51 half-life and is depicted by the change in slope. There is an approximate 20 per cent decrease.

is decreased from 24 days to 20 days (figure 5), as measured by the apparent chromium 51 half life. Burke and Gardner⁴³ have somewhat comparable results following perfusions with higher flow rates without hemodilution using the Kay-Anderson and the DeWall type oxygenators.

In his Nobel Prize lecture in 1930, Karl Landsteiner elaborated on his concept of the individual differences in human blood. In his review of the newer blood factors in 1951, Phillip Levine concluded that "To all intents and purposes, the concept of individuality of human blood is now fully established." This individuality of blood applies to the red blood cells as well as to the other elements, and includes proteins. The recent paper by Gadboys *et al*⁹² has an appealing title—homologous blood syndrome. De-Bakey⁹⁵ points out that many physiologic studies related to cardiopulmonary bypass with pooled homologous blood probably will require re-evaluation—new avenues for expenditure of federal grants. The specific and general body responses to genetically differ-

ent blood pooled in a pump oxygenator are multiple, unrecognized and many of them unknown. *The use of blood when it is not necessary should give us great concern.* Panico and Neptune⁹⁹ describe a method which obviates direct blood priming by making blood circulate as a discrete, under fluid current below the saline-priming compartment. We have conclusively shown the feasibility, advisability and superiority of definitive priming of the heart-lung machine with a blood substitute inducing hemodilution; five per cent dextrose in water being the best solution at the present time. This should apply as well to systems for regional perfusion and dialysis. It is axiomatic that variations of this basic principle of hemodilution are bound to appear.^{92, 93}

In summary,⁴⁴ the basic features we propose for a perfusion system include: (1) Moderate internal hypothermia, 25C to 30C, as measured in the mid esophagus, (2) Low flow rates of 20 ml per kilogram of body weight per minute, and (3) Hemodi-

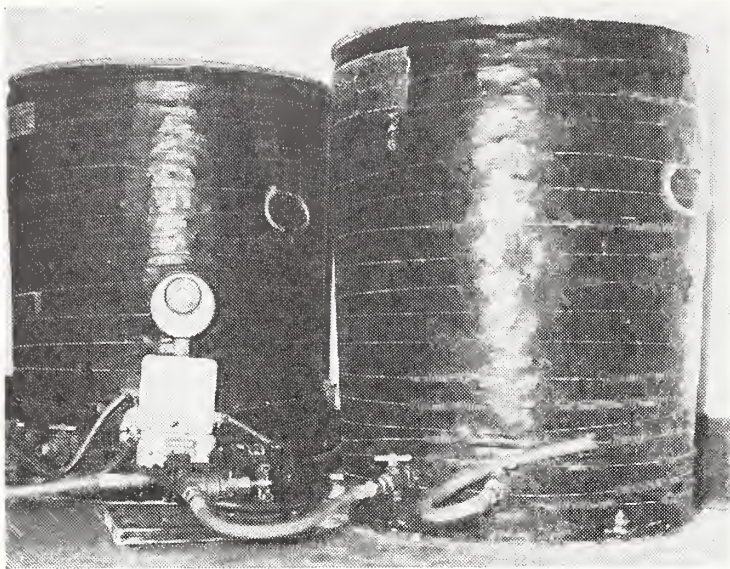


Figure 6. Thirty gallon insulated cans used for cold and warm water as thermal containers for heat exchanger, constructed by Kimray, Inc.

lution by using complete five per cent dextrose in water primes of the heart-lung machine (weight in kilograms x 16 ml.). Virtually all types of open heart surgery have been performed with this system. The only blood needed is that to replace the usual loss from the surgical field, and, whenever considered safe, we prefer to give it after the termination of the extracorporeal bypass. In some cases, this could be dispensed with. Using these principles, we have successfully performed extracorporeal circulation and total body perfusion for open heart surgery in suitable cases without the use of blood before, during, or after surgery.

THE HEART-LUNG MACHINE

"Common sense"
Wesolowski

1. The Heat Source:

In order to cool and warm blood, water at about 4C (a mixture of ice and water) and at 45C is countercurrently pumped at a rate of at least 12 liters per minute through the helical heat exchanger. We first used 30 gallon insulated cans with one-way valve outlets and an Eastern pump with the inlets hooked over the edge of the cans⁴⁵ (figure 6). Next, a Powers thermoregulator was attached to a faucet of cold water and a faucet of hot water and the water temperature thus regulated⁵ (figure 7). Later, a retrograde step was taken, and the cans were unitized into a compact, mobile

form* (figure 8). The output per minute of this unit is about 20 liters when a 60 cycle current is used, and about 12 liters when a 50 cycle current is used.

2. The Heat Exchangers:**

The heat exchanger consists of a 325 cm. long, 22 gauge stainless steel inner spiral which is introduced in the 1" or 1.25" diameter plastic helix of the DeWall-Lillehei bubble oxygenator. This heat exchanger is mirror polished and is easily cleaned as blood comes in contact only with the outside of the tubing.

We proposed to use the large surface area of the stainless steel sponges in the debubbling chamber of the plastic sheet oxygenator***^{3, 93} for heat transfer by incorporating a thermal exchange unit in this chamber. If our investigations bear out our expectations, then this will further simplify our system.

*Manufactured by Kimray, Inc., Oklahoma City, Oklahoma.

**Proposed by Lamya Mujahed Zuhdi.

***Manufactured by Travenol Laboratories, Morton Grove, Illinois.

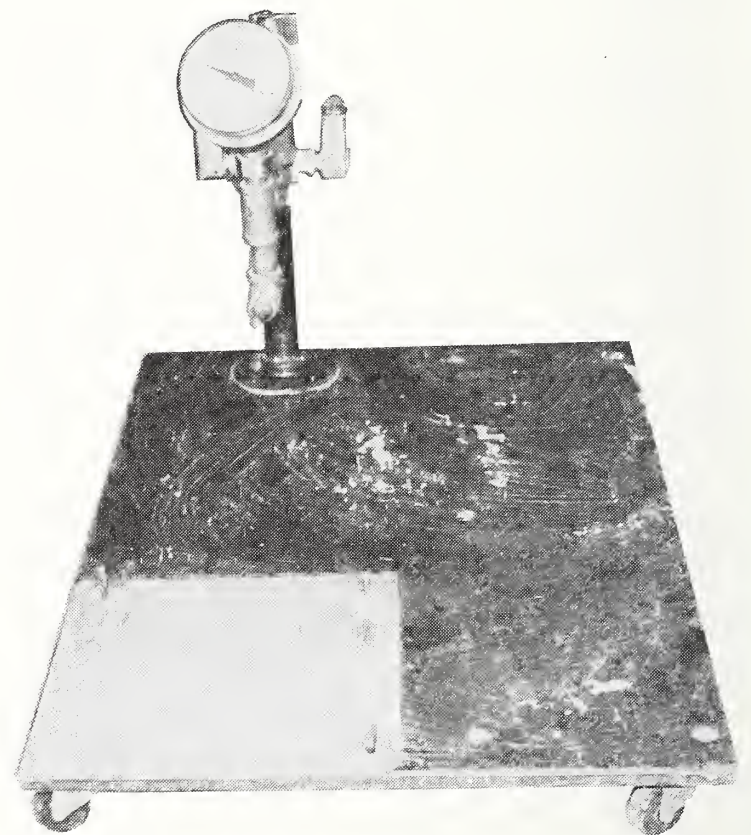


Figure 7. Connected to a cold and hot water faucet, Powers thermomixer regulates the water at the desired temperature. The oxygenator-heat exchanger is placed in the light square and the pump on the right of the platform. Lee Pound, Mercy Hospital, helped us assemble our practical design in December of 1959. It performed well experimentally and was used in our first 53 clinical hemodilution perfusions. Historically, this is the first HLM primed with a blood substitute for intentional hemodilution to be used on a patient.

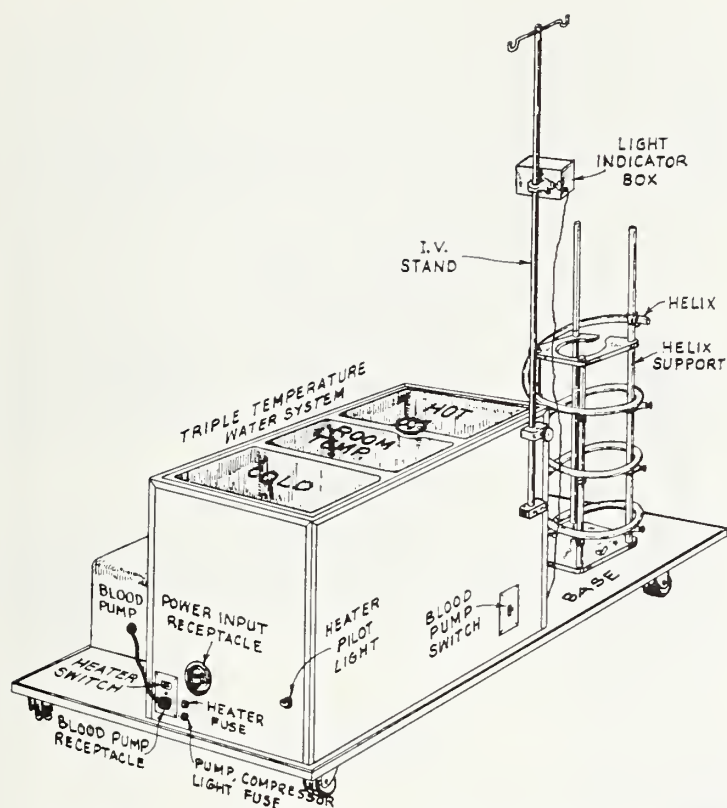


Figure 8. Kimray water tanks replacing thermomixer. The Sigmamotor pump of New York is the only pump used experimentally and clinically in conjunction with this work.

3. The Oxygenator:

The oxygenator is a scaled down DeWall-Lillehei bubble oxygenator.⁴⁶ The nylon filter placed in the cannister is adequate and a volume saving device. The double helix serves as a reservoir, a bubble separator, and a heat exchanger.⁴⁷ An attractive feature is that the oxygenator is disposable except for the cannister, heat exchanger, and connectors. The cost for replacement of parts is less than \$10.00 for children and less than \$20.00 for adults. Figures 9 and 10 are schematic drawings of the system we use for total body perfusion for patients weighing below and above 50 kilograms. Figure 11 is the explanatory legend.

The plastic sheet oxygenator* is a compressed DeWall-Lillehei oxygenator and was first used successfully by Lillehei and his associates. As stainless steel sponges were later incorporated in the debubbling chamber of the tridimensional bubble oxygenator, so they were in the plastic sheet version. This was recently successfully used by Cooley *et al*⁹³ in conjunction with five per cent dextrose in water primes under normothermia. The proposed modification of the plastic sheet oxygenator to conform to our stand-

ards of safety may mend itself beautifully for total body perfusion.

4. The Pump:

Many pumps are adequate including the Sigmamotor,⁴⁸ the modified Dale Schuster,⁴⁹ the United Shoe Machinery Corporation,⁵⁰ and the roller type⁵¹ pumps. The three pumping systems, the Sigmamotor finger, the Mark roller, and a modified Dale Schuster diaphragm, were arranged in identical fashion by Cappelletti *et al*⁵². The arrangement was such that the pumps worked against a common pressure of about 120 mms. of mercury. Tygon tubing $\frac{3}{8}$ " I.D. was used throughout except for the 1" I.D. rubber tubing used with the finger pump. The three pumping systems were operated simultaneously for one hour periods. The index of hemolysis was measured.^{52*} The index of hemolysis is directly proportionate to plasma hemoglobin in milligrams per cent and priming volume in cubic centimeters, and indirectly proportionate to flow rates in cubic centimeters per minute and to time in minutes. The roller pump was superior in showing an index of hemolysis of 0.238 as compared to 1.085 for the diaphragm pump and 0.98 for the finger pump at flows of around 2000 ml for a priming volume of 1250 ml.

In our laboratories, a pump** is under study which is non-occlusive in the pumping section with an output capacity between 200 ml and 2400 ml a minute and which may be set with a dial which is precalibrated to an accuracy within five per cent (figure 12). It consists of a movable platen which alternately compresses the pumping section of two tubes placed in parallel fashion. The valves consist of outside levers occluding each side of the tube in a synchronized way. The pressure inside the pumping tube is adjusted so that the velocity of blood through the valve tubing at closing and opening of the outside levers is minimized. Tables 2 and 3 summarize some preliminary studies performed which include the number of passages and the index of hemolysis and, for the less sophisticated investigator, plas-

$$\begin{aligned} \text{*No. passages equal} & \frac{\text{Flow rate (ml/min)} \times \text{time (min.)}}{\text{priming volume (ml)}} \\ \text{Index of hemolysis equals} & \frac{\text{Plasma hemoglobin rise (mgs. \%)} \times \text{No. passages}}{\text{priming volume (ml)}} \end{aligned}$$

*Manufactured by Travenol Laboratories, Morton Grove, Illinois.

**Designed and manufactured by Kimray, Inc., Oklahoma City, Oklahoma. Not used as yet experimentally or clinically.

ma hemoglobins. Two day old routinely collected citrated blood was used.* Plasma hemoglobin was determined by the spectrophotometric method of Crosby and Furth.⁵³ The characteristics of this pump from these studies appear adequate.

5. The Cardiotomy Suction Return System.⁹⁰

Vacuum induced intracardiac suction and gravity drainage into the lower end of the vertical oxygenating tube has definite limitations but distinct advantages for the per-

*Community Blood Bank, Oklahoma City, Oklahoma.

fusion system we advocate. McCaughan *et al*⁵⁴ pointed out that the vacuum induced suction and gravity drainage is dependent on the vertical distance between the patient and the venous reservoir,** the friction due to the sucker and tubing, and the cross sectional area of the tubing. He calculated the flow to be equal to that which would be obtained if only gravity flow were used from the patient to the venous reservoir. The venous reservoir in the system we describe is rep-

$$**(Z_p - Z_r) - F \text{ equal } \frac{Q^2}{2gA^2}$$

Where Z_p equals the height of the level of the blood at the patient's heart above the floor (ft.), Z_r equals the fluid height in the venous reservoir (ft.), F equals friction in the system, Q equals maximum flow, g equals gravity factor (ft. per sec.²), and A equals cross sectional area of tubing.

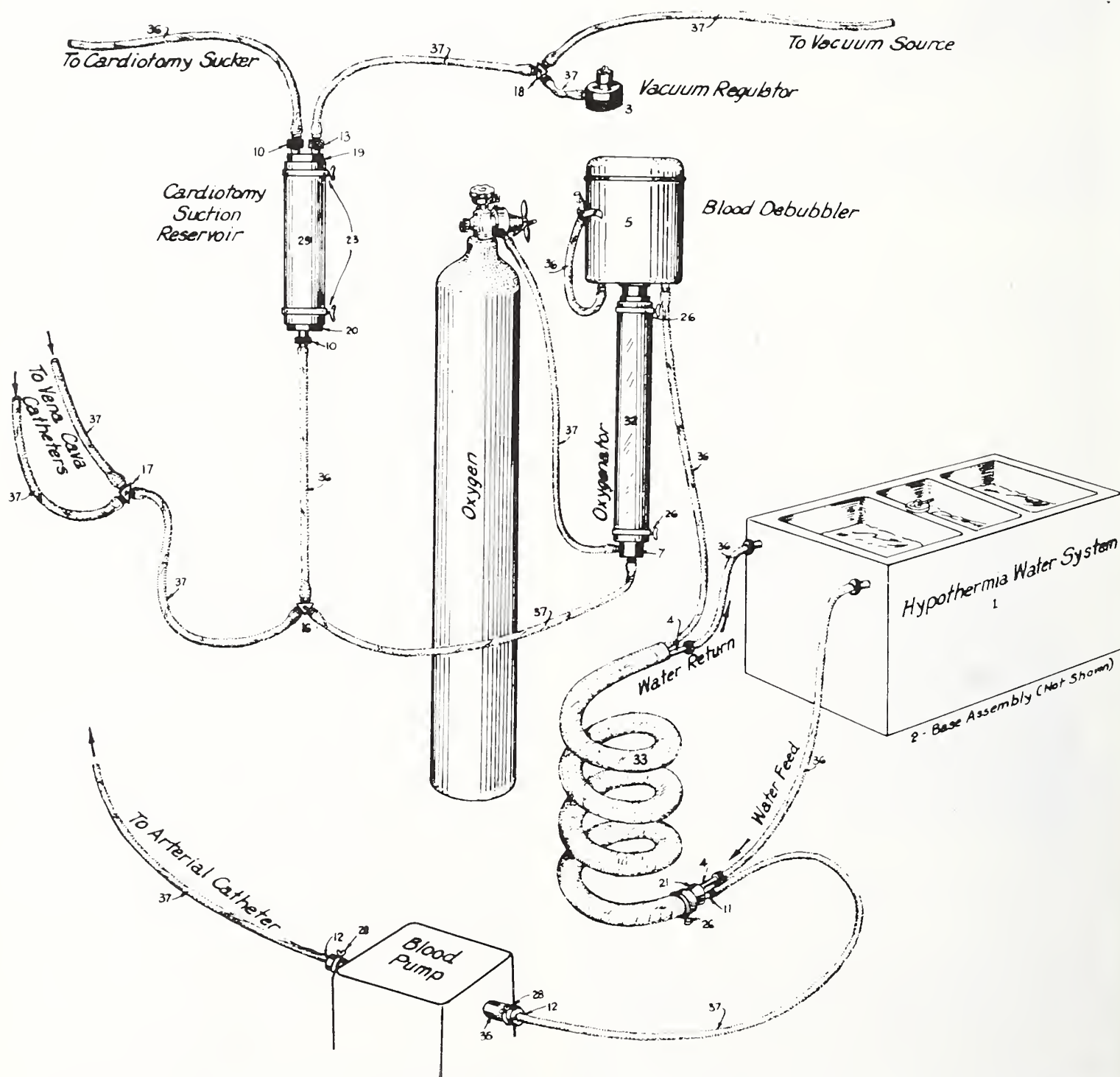


Figure 9. Our hypothermic open heart surgery circuits for patients weighing less than 50 kilograms. They are modifications of the basic DeWall-Lillehei system.

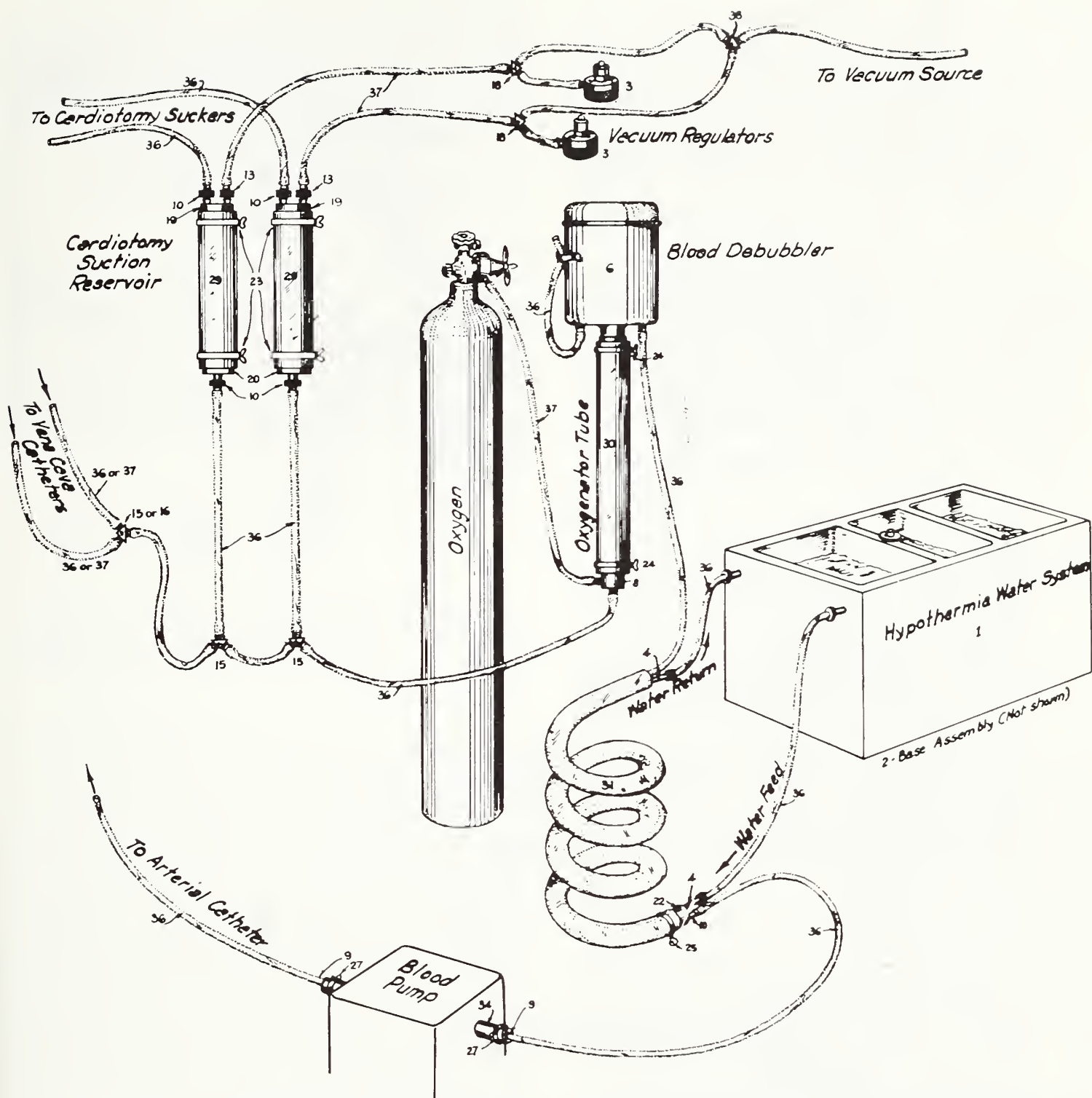


Figure 10. Our hypothermic open heart surgery circuits for patients weighing more than 50 kilograms. They are modifications of the basic DeWall-Lillehei system.

presented by three inches of tubing into which blood flows at different rates from the venae cavae into the oxygenating tube containing a slowly rising column of bubbles. This dynamic venous reservoir is another factor that affects the cardiomy suction return, and has been studied by McNeil *et al.*⁵⁵ Hemolysis is markedly increased by sucking air and blood continuously. Sucking blood continuously yielded a plasma hemoglobin of 95 milligrams per hour, whereas sucking blood and air yielded a plasma hemoglobin of 1320 milligrams per hour.⁵⁴ Clinically, using the perfusion sys-

tem as described above, this cardiomy return suction is adequate for flows of about one liter per minute. A more efficient system is not needed with this setup.

6. The Coronary Perfusion System:

Left and right coronary artery perfusion is used only during acquired aortic valvular surgery. A side tube from the negative side of the arterial pump leads to another pump calibrated to deliver 200 ml per minute to both the left and right coronary artery cannule. Coronary perfusion is thus carried out with cold blood during the cooling phase and with warm blood during the warming phase.

It is started as soon as possible after aortotomy and maintained throughout surgery until closure of the aortic incision.

7. Preparation of Dow Corning Silicone Solution:*

One part of Dow Corning Silicone paste is thoroughly mixed with three parts of ether and allowed to set for 24 hours in a closed jar. The solution which has risen to the surface is drained off. This is mixed with an additional amount of ether. This solution is thinly applied with a soft brush of cloth to the inside of the debubbling can-

*Method of University Hospital, Minneapolis, Minnesota.

ister and to its components. When properly used, antifoam compound is not a hazard even though numerous attempts have been made by several investigators to incriminate it in postoperative complications.⁵⁶

GENERAL CONSIDERATIONS

1. Psychological Preparations:

Patients are familiarized with their environment and nurses prior to the operation and are told explicitly what to expect. The postoperative cooperation of the patient is thereby improved, and it is our opinion that a happier and more speedy recovery is obtained.

Dwg. Ref. No.	Description	Quantity for Adult Unit	Quantity for Children Unit	Total Needed for Full Range
1	Triple Temperature Water System	1	1	1
2	Base Assembly with Helix Stand	1	1	1
3	Medical Vacuum Regulator	2	1	2
4	S.S. Helix Heat Exchanger	1	1	2 (1 spare)
5	Small S.S. Debubbler and Filter (1")	—	1	1
6	Large S.S. Debubbler and Filter (1½")	1	—	1
7	1" S.S. Oxygen Bubble Fitting	—	1	1
8	1½" S.S. Oxygen Bubbler Fitting	1	—	1
9	⅜" x ¾" Reducing Connector (for ¾" I.D. Pump Tube)	2	—	2
10*	⅜" x ⅜" Connector	5	2	5
11	⅜" x ¼" Reducing Connector	—	1	1
12	¼" x ½" Reducing Connector (for ½" I.D. Pump Tube)	—	2	2
13*	¼" x ¼" Connector	2	1	2
14	¼" x ⅜" Connector	—	1	1
15	⅜" x ⅜" x ⅜" "Y"	3	—	3
16	⅜" x ¼" x ¼" "Y"	1	1	1
17	¼" x ¼" x ¼" "Y"	—	1	1
18	¼" x ¼" x ¼" Vacuum Line "Y"	2	1	2
19*	Stopper for Top of Cardiotomy Suct. (2 hole) Reservoir	2	1	2
20*	Stopper for Bottom of Cardiotomy Suct. Reservoir (1 hole)	2	1	2
21	1" Helix Lower End Bushing	—	1	1
22	1¼" Helix Lower End Bushing	1	—	1
23*	S.S. Hose Clamp for Card. Suct. Res.	4	2	4
24	S.S. Hose Clamp for 1½" Tubing	2	—	2
25	S.S. Hose Clamp for 1¼" Tubing	1	—	1
26	S.S. Hose Clamp for 1" Tubing	—	3	3
27	S.S. Hose Clamp for ¾" Pump Tubing	2	—	2
28	S.S. Hose Clamp for ½" Pump Tubing	—	2	2
29	2½" I.D. x 8" Long Plastic Tubing	2	1	2
30	1½" I.D. x 24" Long Plastic Tubing	1	—	1
31	1¼" I.D. x 82" Long Plastic Tubing	1	—	1
32	1" I.D. x 24" Long Plastic Tubing	—	1	1
33	1" I.D. x 82" Long Plastic Tubing	—	1	1
34	¾" I.D. x ⅜" Wall x 12" Latex Gum Pump Tubing	2	—	2
35	½" I.D. x ⅜" Wall x 12" Long Latex Gum Pump Tubing	—	2	2
36*	⅜" I.D. x ⅜" Wall Plastic Tubing	approx. 45'	approx. 25'	
37	¼" I.D. x ⅜" Wall Plastic Tubing	approx. 24'	approx. 45'	
38	¼" x ¼" x ¼" Special Vacuum Line "Y"			

*Sold as a sterile, ready to use, and disposable unit by Travenol Laboratories, Morton Grove, Illinois.

Figure 11. Explanatory legend of Figure 9 and Figure 10.

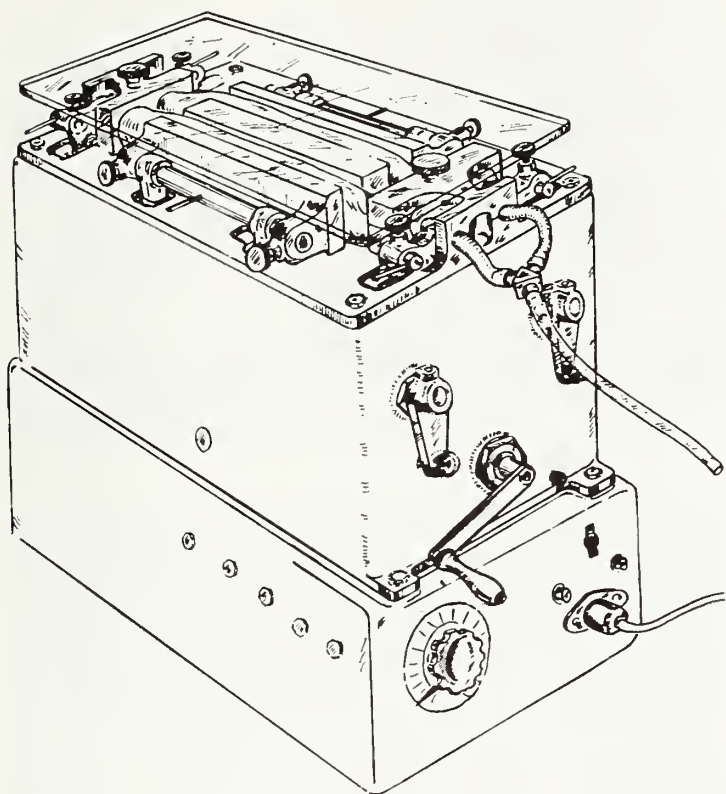


Figure 12. Platen Pump, non-occlusive in the pumping section, compact, silent, pre-calibrated. Flow could be made to be pulsatile or non-pulsatile.

2. Anesthesia:

Premedication consists of the administration of Nembutal, Demerol, and Scopolamine to adults, and Demerol and Scopolamine to children. Induction and intubation are carried out with intravenous Thiopental and Succylcholine for adults, and by inhalation of nitrous oxide and fluothane for children. Maintenance anesthesia is obtained with 70 per cent nitrous oxide and oxygen supplemented with curare. During hypothermic perfusion, most or all anesthetic agents are discontinued and after the occlusion of the venae cavae, the patient is intermittently ventilated with a humidified 60 per cent helium and oxygen combination. High oxygen tension may rapidly damage the alveoli of lungs that have no pulmonary

blood flow.⁵⁷ At completion of the operation, the patient's response is usually prompt and sufficient to enable him to obey verbal commands while still on the operating table. Postoperative evidence of curarization has usually been absent. Esophageal temperature at the termination is usually around 33C.

3. Position of Patient:

All patients are supine with 5° to 10° of head down position. Spurred by the studies of a great teacher, Charles Fries,¹⁰⁰ Bagdonas *et al*⁵⁸ evaluated quantitatively the effect of body positions on the embolization of air from the base of the aorta. Two cubic centimeters of air were injected into the base of the aorta in dogs in which the level of the base of the aorta was varied in relation to the level of the head; the amount of air presenting in the common carotid arteries in each of five positions was determined by measuring the amount of air trapped in a bubble trap incorporated into the system. He concluded that the head down position gives relative protection from cerebral air embolism and that air can be trapped in the proximal aorta or major branches and may remain there for at least 30 minutes. The hazards of air embolism from the heart-lung machine are virtually absent, whereas the occurrence of air embolism from the operative site is present and is usually introduced during surgery on the left side of the heart or if the blood level has inadvertently dropped too low in the left atrium during repair of an interatrial defect.

4. Arterial Cannulation:

Bagdonas *et al*⁹¹ performed a further study concerning the fate of a controlled amount of air entering the femoral artery with the blood of the pump oxygenator during cardiopulmonary bypass. Again, he observed that

Duration of Circulation	Pre-circulation values	60 min.	120 min.	180 min.	240 min.
Average plasma hemoglobin mg%	11.66	16.69	24.73	32.10	37.12
No. of Passages		50	100	150	200
Index of Hemolysis		.1	.1307	.136	.127
Hematocrit	39.4	39.4	39.2	39.2	38.6
White blood cells/ cubic millimeters	7820	7630	6920	6750	6400
Platelets/ cubic millimeters	376,000	334,000	300,000	269,000	251,000

Average values of five experiments using the non-occlusive platen pump with a flow rate of 500 ml per minute in a reservoir of 600 ml of ACD blood.

TABLE 2

with the head down position, air emboli were consistently observed in the mesentery of the bowel before it appeared in the common carotid artery. In the supine head down position, the ostium of the right coronary artery is the most vulnerable area for air embolism. We have observed frequent right coronary artery air embolism following mitral valve surgery performed through a right anterolateral thoracotomy. A needle inserted at the base of the aorta in this region may allow the escape of a few trapped air bubbles.⁶⁰ Continued partial perfusion will eliminate the bubbles in the coronary system with return of a good right ventricular beat and reversal of the electrocardiogram to the preoperative pattern. We have routinely used the femoral artery for the return of the arterialized blood to the body, except in small infants. DeWall⁵⁹ inserts the arterial cannula into the ascending aorta through a purse string suture and encounters no difficulties. We have had a single complication in 300 femoral cannulations which consisted of a fibrous band partially compressing the femoral artery three months following surgery. It was divided and the patient is doing well.

5. Anticoagulation:

Probably levels of 80 to 100 gamma of heparin per cubic centimeter of blood, three to five milligrams per kilogram of body weight, are advisable during cardiopulmonary bypass. The effect of heparinization at similar amounts over a four hour period without perfusion was investigated by Domingo *et al.*⁶¹ Progressively increasing microscopic hematuria was found but this was much less than the gross hematuria observed

in patients placed on partial perfusion for the same period of time. No pathological changes were noted in the lungs, kidneys, brain, heart, adrenals, or bladder.

At the end of the perfusion, polybrene or protamine is given intravenously in doses slightly in excess of the amount of heparin given. No additional amounts of heparin have been used during the perfusions, the longest perfusion having lasted 189 minutes.

6. Blood Replacement and Coagulation Factors:

Freshly drawn heparinized blood has been advocated for open heart surgery; fresh to secure the least altered blood and heparinized to avoid citrate poisoning and overloading with fluids. Our studies indicate that citrated blood* up to five days maintains most of its measured elements and does not change markedly when subjected to our double helical system.⁶² Table 4 is a summary of the changes in blood at the end of one hour run at 25C and 37C, at a flow rate of 250 ml a minute with a 500 ml reservoir. The comparison of results seems to indicate that it is the low flow rate more than the temperature difference which is responsible for the small alterations. Blood is used only to replace the usual blood loss from the thoracotomy field. Neither the heart-lung machine nor the patient is primed with blood, not even for "wetting" losses.¹⁸ The advantages of using routinely collected citrated blood for blood replacement in open heart surgery are many. The blood requirement is placed on the level of any other major surgery. Our preoperative order is to have typed and crossmatched five pints for adults and three for children and infants. There is a reduc-

*Community Blood Bank, Oklahoma City, Oklahoma.

Duration of Circulation	Pre-circulation values	60 min.	120 min.	180 min.	240 min.
Average plasma hemoglobin mg%	14.23	34.08	40.78	68.21	88.59
No. of Passages		100	200	300	400
Index of Hemolysis		.19	.1827	.1799	.1859
Hematocrit	43.7	43.7	43.5	43.3	43.2
White blood cells/cubic millimeters	10,000	9430	8570	8130	7700
Platelets/ cubic millimeters	207,000	181,000	158,000	124,000	110,000

Average values of three experiments with the non-occlusive platen pump with a flow rate of 1000 ml per minute in a reservoir of 600 ml of ACD blood.

TABLE 3

	Average Change at 25 C*	Average Change at 37 C*
Hematocrit	—4.4%	—6.5%
White blood cells	—850 cells	—1,100 cells
Platelet count	—17,500/cu.mm.	—38,000/cu.mm.
Plasma hemoglobin	+46.1 mg.%	+23.6 mg.%
Plasma sodium	+1 mEq./l.	+1 mEq./l.
Plasma potassium	+0.5 mEq./l.	+0.02 mEq./l.
Plasma chloride	+1.3 mEq./l.	+0.7 mEq./l.

TABLE 4

Summary of changes in blood at the end of one hour run at 25 C. and 37 C. at a flow of 250 ml a minute with a 500 ml reservoir.

*—Indicates a decrease and + an increase.

tion in anaphylactoid responses, acidosis, sludging, major and minor blood incompatibilities, hepatitis, and other complications. Because of the relatively small amounts of blood used, the decrease in pH of donor blood that occurs after its collection due to an accumulation of lactic acid from anaerobic glycolysis⁶³ does not appreciably contribute to the degree of metabolic acidosis observed after total body perfusion. This is even more important in individuals with cyanotic congenital heart disease with uncompensated metabolic acidosis under ambulatory conditions prior to perfusion.⁶⁴

There is a definite decrease in the number of platelets in the postoperative count ranging from 114,000 to 410,000 per cubic millimeter with an average of 206,000, the preoperative value being 371,000 per cubic millimeter. There are no significant alterations in the coagulation time, prothrombin time, prothrombin consumption time, and fibrinogen levels. In 33 consecutive patients, we found that the plasma hemoglobin average rise was of 13.9 milligrams per cent for an average 60 minutes of perfusion with a range from 2.8 to 83.4 milligrams per cent. Postoperative chest drainage in 77 patients, a relatively good index of over-all hemostasis, ranged from 0 ml to 39 ml per kilogram of body weight over an average 12 ml per kilogram of body weight over an average period of 37.9 hours.³⁵

7. Simple Aortic Occlusion and Ventricular Fibrillation:

Simple aortic occlusion during moderate internal hypothermia for short periods provides an empty "motionless" heart and prevents air embolism.⁷⁷ Fibrillation may occur, but this is of no consequence.⁶⁵ Electroshock usually suffices to restore regular ventricular rhythm and at a mid intraesoph-

ageal temperature of around 32C, a 1:1 atrioventricular response is usually obtained. The relative safety of simple aortic occlusion at low temperatures has been demonstrated by Hegnauer and D'Amato,⁶⁶ who showed that the oxygen consumption of the heart decreases by one-half at 30C and by more at lower temperatures. In none of our patients, either at the termination of surgery or during the follow-up period, the longest being more than three and one-half years, were there clinical or electrocardiographic signs of myocardial ischemia.

One of the earliest methods of reducing blood obscuring the intracardiac field during surgery consisted of a Rumel tourniquet to constrict the ascending aorta just distal to the coronary ostia.⁶⁷ In 1955, Melrose and co-workers⁶⁸ described potassium citrate induced cardiac arrest. Later, Lamb⁶⁹ supported the use of acetyl choline and Sealy *et al*⁷⁰ advocated a mixture of drugs. Shumway,⁷¹ Urschel and Greenberg,⁷² Kenyon *et al*,⁷³ and Gott, Johnson and Lillehei⁷⁴ have protected or induced cardiac arrest with hypothermia. Simple clamping of the ascending aorta under normothermic conditions and without the use of any adjuncts to stop the heart or perfuse the coronary arteries was successfully performed accidentally for 33 minutes by Allen and Lillehei⁷⁵ and was intentionally done for shorter periods by Cooley.⁷⁶

When the oxygen requirements are lowered with hypothermia, simple aortic occlusion becomes relatively safe. Clinically in the patients studied, the response of the heart following repeated five to 15 minute periods of aortic occlusion was excellent and resulted in a sustained normal rhythm. This agreed with Gott, Johnson, and Lillehei,⁷⁴ that is, that high energy phosphates, glycogen content, and the lactic acid level of selective hypothermia in arrested hearts change minimally. Intermittent aortic occlusion has been used in all congenital heart diseases and in acquired mitral disease. However, in acquired aortic valvular disease requiring total or partial replacement, coronary perfusion of the left and right coronary arteries is resorted to with about 200 cubic centimeters of blood a minute. In a study of the effects of ischemia and hypoxia on the specialized conducting system, it was found by Stuckey *et al*⁷⁸ that atrial and nodal con-

duction were the most sensitive to ischemia and hypoxia; the specialized conducting system, except for the AV node, was relatively resistant to ischemia; the peripheral conduction system was most resistant. Electrical activity was abolished in all portions of the conduction system with 40 minutes of ischemia.

8. Monitoring Devices:

Temperature, arterial pressure, central venous pressure, electroencephalogram, electrocardiogram, pH, pCO₂ and pO₂ are some of the parameters that the fruitful minds of surgeons have required for the safe conduction of total body perfusion. Using the basic principles outlined above with precalibrated flow rates, the continuous monitoring of the temperature as measured in the mid esophagus is all that is usually needed. Perfusion is stopped around 33C, and only when there is a good aortic and peripheral pulse by palpation. In addition, the electrocardiogram is helpful in mitral and aortic valvular surgery. Its reversal to a preoperative pattern is usually indicative that partial perfusion has served its purpose in getting rid of currents of injury due to aortic occlusion and right coronary artery air embolism, and coincides with good aortic and peripheral pulses. Accurate blood loss computation is performed by weighing sponges and measuring the amount aspirated.

9. Mitral Stenosis and Hemodilution:

Mitral valvulotomy using the closed or semi-open technique has proved rather disappointing. This is evidenced by the fact that continuous changes have been proposed to perform a better job on the mitral valve. Logan and Turner⁷⁹ and others^{80, 81, 82} utilized a mechanical dilator through a left ventriculotomy, guiding the instrument with a finger in the left atrium. Bailey, Zimmerman and Likoff⁸³ used the right approach and partial perfusion. Some surgeons have recommended open correction in selected cases, whereas Nichols *et al*⁸⁴ have reported a series of open operations routinely performed for mitral stenosis. The advantages of direct vision are obvious, as one can see the pathology and proceed to perform its proper correction. It is the only way to safely remove atrial clots, the largest in our series weighing 297 grams.

Evaluation of competency is possible by direct vision and appropriate measures can be taken for securing it. In our institution, mitral stenosis has been routinely dealt with by the open technique since 1959, and this is reported elsewhere.⁸⁵

The main objection to open mitral commissurotomy is set aside with the hemodilution technique because open heart surgery is rendered relatively simple without extravagant outlay of apparatus, personnel or money. Air embolism has occurred into the right coronary arteries. However, careful evacuation of air from the left ventricle and atrium by filling these chambers with blood from the lungs while the mitral spring is in place, and from the base of the aorta by inserting a needle, have reduced this hazard to a minimum. Partial perfusion is continued until disappearance of ST segment changes and obtainment of a good heart beat. In 35 consecutive cases of mitral stenosis, there was one death, a mortality rate of 2.8 per cent. In 53 consecutive cases of mitral valve surgery, there were five deaths, a mortality rate of 8.8 per cent. Among these were two cases that necessitated replacement with Starr-Edwards valves, and both did well.

10. Pregnancy and Hemodilution Perfusion:

Leyse *et al*⁸⁶ reported a case of a woman who, in her fourth month of pregnancy, had correction of aortic stenosis using a bubble oxygenator. She went on to deliver a male infant with multiple congenital anomalies. He died at the age of four months. Dubourg *et al*⁸⁷ reported successful correction of a case of tetralogy of Fallot during the third month of gestation. However, the mother aborted spontaneously during the sixth month.

Rowbotham *et al*⁸⁸ reported a 22-year-old woman, eight weeks pregnant, who had sustained a severe head injury. Because of deterioration of her condition, the body temperature was lowered to between 30C to 36C by external hypothermia for five days. The patient had an ultimate partial recovery and delivered a normal full term infant. Boatman and Bradford⁸⁹ excised an aneurysm of the internal carotid artery using external hypothermia and a vascular shunt in a 41-year-old woman, twelve to fifteen weeks pregnant. The body temperature was lowered to 30.5C. Her subsequent pregnancy

Defect	No. of Cases	No. Living	Age, Years	Weight, Kg.	Pump Time, Min.
Interatrial Defect	10	10	31 (4-47)	43 (17.5-70)	41 (28-88)
Interventricular Defect	11	11	8 (1-25)	19 (12-59)	71 (29-100)
Pulmonary Stenosis	8	8	10.5 (4-28)	37 (14.5-92.1)	57.5 (29-150)
Tetralogy of Fallot	7	5	8 (4-29)	106 (16.3-65)	106 (61-154)
Mitral Disease	5	5	35 (21-52)	49 (43-60.8)	69 (30-81)
Aortic Stenosis	2	2	18-27 19.6	49-71 53.47	91-96 75.9
TOTAL AND AVERAGES	43	41	(1-47)	(12-92.1)	(29-154)

TABLE 5

Total number of cases in which low flow rates and moderate internal hypothermia were used with blood primed heart-lung machine.

was uneventful and she was likewise delivered of a healthy infant. They suggest, on the basis of experimental studies of Aubrey Smith,⁸⁹ that hypothermia during the period of rapid organ formation be avoided. There seems to be no deleterious effect of moderate cooling during the early second trimester of pregnancy.

We have successfully performed a direct vision mitral commissurotomy on a young mother early in her second trimester of pregnancy with subsequent delivery of a full term normal infant. This 35-year-old housewife was having progressive dyspnea and signs of congestive heart failure despite repeated periods of hospital stay and strict medical management. Her last menstrual period started December 2, 1959. Cardiac surgery was performed on March 31, 1960. She weighed 40 kilograms. After the usual

cannulations, connections were made to the double helical reservoir heart-lung machine primed with 650 cubic centimeters of five per cent dextrose in water. Partial perfusion with a flow rate of 800 cubic centimeters per minute was started and the lowest mid intraesophageal temperature was 26.5C. Venae cavae were occluded for total bypass at 30C as measured in the mid-esophagus, the aorta was clamped at its base, and the left atrium entered from the right side. The mitral valve was narrowed to an estimated 0.8 centimeter in diameter. Both anterior and posterior commissures were developed precisely to the valve ring. There were no clots in the atrium and no evidence of calcification of the mitral leaflets. Aortic occlusion was continued for six minutes until closure of the atrial incision with ensuing fibrillation. Rewarming was then begun.

Defect	No. of Cases	No. Living	Age, Years	Weight, Kg.	Pump Time, Min.
Interatrial Defect	29	29	21.9 (5 mo.-47 yr.)	39.3 (4.1-90.6)	50.0 (17-168)
Interventricular Defect	35	31	10.9 (1-45)	29.3 (7.5-71.3)	74.0 (18-173)
Pulmonary Stenosis	18	15	7.5 (1-25)	20.8 (8.7-65.9)	50.5 (19-118)
Tetralogy of Fallot	6*	2	10.0 (5 mo.-23 yr.)	37.3 (9.1-54.8)	120 (35-215)
Mitral Disease	53	48	39.0 (17-63)	58.0 (39.8-77.3)	81.6 (15-218)
Aortic Disease	13	10	21.3 (4-52)	44.3 (18.1-76.4)	121 (21-332)
TOTAL AND AVERAGES	154	135	18.42 yr. (5 mo.-52 yr.)	38.83 (4.1-90.6)	82.75 (17-332)

*Three had previous shunt procedures.

TABLE 6

The first 154 patients in whom hemodilution, low flow rates, and moderate internal hypothermia were used. Five per cent dextrose in water primed heart-lung machine.

Defibrillation was carried out on three different occasions with restoration of normal cardiac rhythm. Because of a relatively weak cardiac stroke, supportive partial perfusion was carried out for an additional 45 minutes, at which time a strong vigorous cardiac impulse was obtained. Total perfusion time was one hour and seven minutes. Banked citrated blood was used to replace the 1500 cubic centimeters loss at time of surgery. The postoperative hospital course was entirely uneventful and the patient was dismissed on the tenth postoperative day. The remainder of the second and third trimesters of pregnancy progressed without event. The patient was delivered of a normal female infant on September 13, 1960. Follow-up examinations of the heart demonstrate only a slightly accentuated mitral first sound and no mitral diastolic murmur. The patient at present has a normal work tolerance, is without symptoms, and her child is growing normally.

11. Clinical Experience

Table 5 summarizes our experience with the use of moderate internal hypothermia and low flow rates; table 6 summarizes our experience in the first 154 patients with hemodilution, in addition. Our total experience with hemodilution has exceeded 200 patients since the preparation of this manuscript.

* * *

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Figures 2, 3, 4, 5 sketched by Barbara Moffatt.

Figures 8, 9, 10, 12 sketched by Garman Kimmel.

Photography by Bob Duncan.

At times, known facts are discovered and their variants hailed by the eager and publicity seeking "investigator." Some we personally know have unselfishly given of themselves during the formative period to bring

about present day extracorporeal systems and open heart surgery. In the process, some of them dropped by the wayside for many to reap the fruits. In alphabetical order: Clarence Dennis, Richard DeWall, Charles Fries, Karl Karlson, Walton Lillehei, Constantine Pereyma, Dwight Spreng, Herbert Warden and Sigmund Weselowski. Our apologies to those who rightfully expect to be acknowledged and we did not.

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430 N.W. 12th, Oklahoma City, Oklahoma

Prognosis Following Myocardial Infarction

WILLIAM L. HUGHES, M.D.*

IN 1912, Doctor James B. Herrick wrote in the *Journal of the American Medical Association* on the clinical features of sudden obstruction of the coronary arteries, and by so doing introduced to clinicians an entity formerly recognized only at the autopsy table.¹ Doctor Herrick ventured into the realm of prognosis, stating that some patients probably survive infarction. It is of historical interest, and to Doctor Herrick's credit, that he felt prognosis would be improved by the use of strict bed rest, morphine, and digitalis. However, the question of which patients survive remains unanswered. Such variables as shock, pulmonary edema, ventricular tachycardia, and recognized pulmonary embolism are widely accepted as ominous signs. On the other hand, the sex and age of the patient, the occurrence of previous infarction or angina, arrhythmias, blocks, gallop rhythm, congestive heart failure, obesity, hypertensive cardiovascular disease, diabetes, or other related diseases have been reported to affect the prognosis both adversely and not at all.

The thoughtful clinician from time to time must wonder why there is so little unity of thought in this matter. Most studies evaluating groups of patients with myocardial infarction, to determine prognostic factors, evaluate isolated variables, e.g. hypertensive cardiovascular disease, as they occur in a large group of patients ignoring the presence and contribution of other variables and the effect of the interaction of multiple variables on the prognosis. It is conceivable that variables which alone are benign, when com-

bined with other benign variables, form a lethal complex. Thus, the effect of a single variable can be studied only in patients having had a myocardial infarction in whom only that variable is present.

To evaluate the contribution of single variables to prognosis, 132 patients were studied who had had an infarction and in whom only one variable was present. The mortality for the total group was 14.4 per cent. In those patients with angina (34) or diabetes (10), there were no deaths. In those patients with hypertensive cardiovascular disease (21), there were two deaths with a mortality of 9.5 per cent. There were 14 patients with conduction disturbances with a mortality of 14 per cent. Twenty-six patients had arrhythmias with a mortality of 19.2 per cent. Congestive heart failure was present in seven patients resulting in a mortality of 14.3 per cent. Twelve patients had previous infarctions with a mortality of 16.7 per cent. In patients having pulmonary infarction or shock, mortality was 50 per cent and 100 per cent, respectively.

Such a study as this yields information concerning the influence of single variables on prognosis, but it does not answer the question of the effect of multiple variables on each other, or their combined effect on prognosis. This is a complex question which cannot be answered by the usual methods of clinical analysis. Perhaps the increasing use of electronic computers in medical analysis will result in a solution of some of the problems so innocently posed by Doctor Herrick.

REFERENCE

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*Instructor, Department of Medicine, University of Oklahoma Medical Center; 800 N.E. 13th Street, Oklahoma City 4, Oklahoma.

Dean's Message

This is the time of year that all of us tend to focus our interests on the activities of the State Legislature. Particularly, we wonder how the legislators are going to come to grips with the budget requests from state agencies for operational funds for the biennium which begins on July 1. Among these requests are those of the School of Medicine (\$2,313,000) and the University Hospitals (\$4,244,388) for each year of that biennium. These requests are very realistic, especially since the Medical Center did not share in the 11.1 per cent increase in allocations which were made available to the State Regents for Higher Education during the last biennium, and, therefore, there is some "catching-up" to do. Unfortunately, the state regents have already pared these requests to \$1,642,146 and \$3,203,820, respectively, presumably in anticipation of limited additional revenue available to the state next year.

Of course, in recent years financial support for the activities and services at the Medical Center has had to be achieved from many sources other than state appropriations. This is proper, to a certain extent, but it is evident that a healthy balance should be maintained between the amount of support derived from state appropriations and that which the faculty is obliged to produce from other sources. Unfortunately, our state

has not assumed its responsibilities in underwriting a proper proportion of Medical Center operations in the past. This has obligated the faculty to seek a disproportionate share of the necessary revenue from various outside sources.

The penalty of continuing along this route should be obvious to all. Since funds from such sources are invariably earmarked, often for research purposes, their continued acquisition in large amounts tends to shift the support for the Center away from education and patient care, and towards specialized, contracted research. Indeed, this Center has devoted friends who have expressed concern that such a shift is occurring, and some have expressed reservations about any new provisions, whether capital or operational, until the "imbalance" is corrected. However, the only way to correct it is for the state to assume its just share of operations and modernization.

The sheer momentum of its growth requires that the Medical Center begin its modernization now, preferably in an orderly and controlled manner. Apathy, or even opposition, to increased local support at this time would be unwise, since it would be interpreted as favoring the existing imbalance in support, and perpetuating it in the direction of faculty activities geared to produce the needed operational income and facilities.

Mark R. Everett

Portal Hypertension with Massive Hemorrhage from Esophageal Varices*

J. M. INGALLS, M.D.
HARRIS D. RILEY, JR., M.D.
GILBERT S. CAMPBELL, M.D.

*Case report of surgical treatment
with superior mesenteric vein to
inferior vena cava shunt in a child.*

PORTAL HYPERTENSION may be defined as an abnormal condition which develops in response to obstruction of portal blood flow. It may result from a wide variety of disorders producing obstruction in the portal vein or its tributaries or it can result from intra-hepatic obstruction. With the development of new operative procedures to relieve the increased pressure in the portal system, interest in the problem of portal hypertension has been renewed. Most studies of this problem have been concerned with the disorder in adults. While frequently not considered as a diagnostic possibility, it has been shown that portal hypertension may have its onset and in fact have its initial overt clinical manifestation during infancy and childhood.¹

In those children whose portal hypertension is due to portal vein occlusion, portal vein to inferior vena cava shunts are not feasible. Splenic vein to renal vein anasto-

mosis may prove successful if the splenic vein is patent and of adequate size. There remains a particularly difficult group of patients with bleeding esophageal varices, namely those patients with portal vein thrombosis and with a small or thrombosed splenic vein. The superior mesenteric vein, third in magnitude of diameter in the portal bed, has been used in a variety of portacaval shunts. In 1953, Marion in France and Clatworthy in the United States anastomosed the side of the intact superior mesenteric vein to the cardiac end of the divided inferior vena cava.^{2,3} The inferior vena cava was transected just proximal to the junction of the two common iliac veins.

This paper reports the problem posed by a seven-year-old boy with massive hemorrhage from esophageal varices in whom the portal and splenic veins were thrombosed. A superior mesenteric vein to inferior vena cava shunt was constructed in this child and represents the first time this procedure has been done at the University of Oklahoma Medical Center. It is of interest that in Clatworthy's original description of this procedure he cited as one of his two case reports the utilization of this procedure in a patient referred to him from Ponca City, Oklahoma.

CASE REPORT

S. S. was admitted to Children's Memorial Hospital for the fifth time as an emergency because of hematemesis and melena. He had

*From Departments of Surgery and Pediatrics, Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma

received five units of blood in his home town hospital during the forty-eight hours prior to his transfer to Children's Hospital.

The present illness began in October 1958 with an episode of massive hematemesis when the child and his family were living in California. At that time a diagnosis of portal hypertension with bleeding esophageal varices was made and on 10-29-58, a splenectomy was done. A splenorenal shunt was not done due to the small size of the splenic vein. At the time of the splenectomy it was felt that the portal vein was thrombosed. Two days following the splenectomy, the boy suffered another massive hemorrhage from bleeding varices and at that time an emergency transesophageal ligation of the varices was carried out. After the family moved from California to Oklahoma the boy continued to have recurrent bleeding from esophageal varices and had been admitted to Children's Hospital four times because of this problem. On this fifth admission to Children's Memorial Hospital systolic blood pressure was 70 mm Hg., heart rate 140 per minute, respiratory rate 16 per minute, temperature 101°F. (oral). Physical examination revealed a thin, acutely ill, restless, pale seven-year-old boy. A surgical scar was evident in the left upper quadrant which extended around the left costal margin. No abdominal masses were palpated but the abdomen was diffusely tender especially in the epigastric area. Laboratory studies included a hemoglobin 8.9 grams per cent,

hematocrit 20 per cent, white blood count 20,000 per cubic mm., urinalysis was normal, and the chest roentgenogram was within normal limits.

Hospital course—The patient was receiving whole blood at the time of his admission to Children's Hospital. Following his admission he received additional whole blood transfusions, skim milk drip via a naso-gastric tube, strict bed rest and mild sedation. The bleeding progressed in spite of these measures and surgical intervention was felt mandatory. After the patient had received a total of 13 units of whole blood, he was taken to the operating room though still actively bleeding from his esophageal varices and a mid-line abdominal incision extending approximately 10 cm. above and below the umbilicus was made. The liver appeared grossly normal and a branch of the superior mesenteric vein was cannulated with a polyethylene tube and pressure recorded in this vein was 385 mm. of saline. After recording the pressure, a portal venogram was done through the same polyethylene catheter and the portal venogram showed no contrast media in the area of the portal vein but numerous collateral channels in this area. The largest vessels visualized in the portal vein system were the superior mesenteric vein and the stump of the splenic vein. The inferior vena cava was divided just above the common iliac vein and the cardiac end of the divided inferior vena cava was anastomosed to the side of the superior mesen-



Figure 1. Pre-shunt photograph in supine patient with head to the left. SMV—superior mesenteric vein. IVC—inferior vena cava.

teric vein. (figures 1, 2) The post-shunt pressure in the superior mesenteric vein was 260 mm. of saline with a simultaneous reading of 210 mm. of saline in the inferior vena cava. The patient tolerated the procedure very well and his postoperative course was uneventful. Immediately postoperatively the patient's hematocrit was 47 per cent and remained at this level during his entire postoperative course. The patient was allowed limited ambulation on the eighth postoperative day and was discharged on a bland diet the tenth postoperative day. He has remained essentially asymptomatic and has not bled during his follow-up so far (four months). There was a mild and transient edema of the lower extremities following the operative procedure.

DISCUSSION

This patient illustrates one of the most complex problems in patients with bleeding esophageal varices. The portal venous anatomy in patients with thrombosis of the portal and splenic veins nullifies any efforts at direct portacaval or spleno-renal shunts. A variety of imaginative shunts have been constructed between the portal venous system and the inferior vena cava in such patients

employing either prosthetic grafts or autogenous vein grafts but the failure rate has been unacceptably high. Since 1953, when Marion and Clatworthy demonstrated that the superior mesenteric vein to inferior vena cava shunt could be utilized in these patients, the Marion-Clatworthy procedure has been the most satisfactory solution to date for reducing portal vein pressure in such patients.

Recently Vorhees and Blakemore⁴ reported 34 patients who had undergone exploratory operations in the hope that a superior mesenteric vein to inferior vena cava shunt could be constructed. Technically satisfactory shunts were established in 26 of these 34 patients. The two contraindicating factors in the eight patients in whom a shunt could not be constructed were thrombosis or smallness of the superior mesenteric vein. In the 26 patients in whom the shunt was constructed, portal hypertension was due to portal vein thrombosis in 11 patients and to cirrhosis of the liver in the remaining 15. Nine of the 26 patients had had ten previous shunts (either splenorenal or portacaval shunt) which failed to reduce portal pressure. Of the 26 patients reported by Vorhees and Blakemore only one has had recurrence of bleeding from esophageal varices during the follow-up period. Dependent edema of the legs occurred in nearly all of their patients

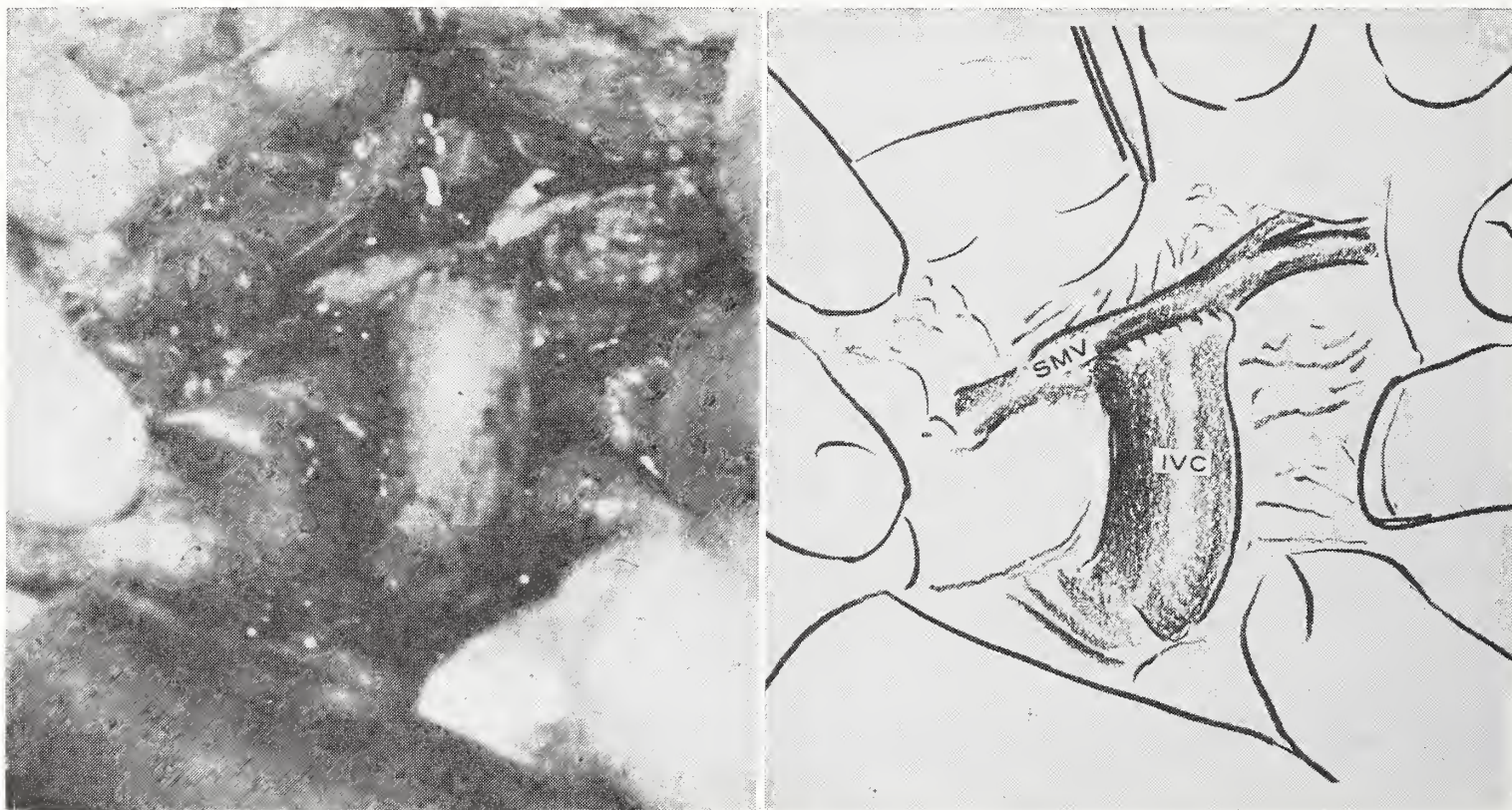


Figure 2. Cardiac end of inferior vena cava anastomosed to side of superior mesenteric vein.

over 12 years of age when hypoproteinemia associated with cirrhosis was present, however, in patients under 12 years of age this problem was not noted.

SUMMARY

A patient with portal hypertension and bleeding esophageal varices underwent an emergency shunt between the inferior vena cava and the superior mesenteric vein. To our knowledge this is the first time that this procedure has been carried out at the University of Oklahoma Medical Center. A brief review of the literature on this subject is presented. Although the follow-up period on all cases accumulated is as yet far too brief to draw any significant conclusions, it is encouraging to note that the superior mesenteric vein to inferior vena cava shunt is a relatively simple, safe, and

efficient method for reducing portal hypertension. It adds a further method of surgical treatment in those patients in whom the splenic vein is inadequate for anastomosis and in whom portal vein thrombosis has occurred.

ACKNOWLEDGEMENT

This patient was referred by Doctor L. A. S. Johnston, Holdenville, Oklahoma and his cooperation in the follow-up and care of this patient is acknowledged.

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4. Vorhees, A. B., Jr., and Blakemore, A. H.: Clinical Experience with the Superior Mesenteric Vein—Inferior Vena Cava Shunt in the Treatment of Portal Hypertension, *Surg.* 51:35, 1962.

ABSTRACTS

LUNG WEIGHT AS A GAUGE OF PULMONARY FUNCTION

Studies of dry lung weights were performed in nine normal dogs sacrificed by air injection and on the lungs of 20 humans dying from accidental or sudden death without evidence of pulmonary disease.

The lungs were washed by tracheal lavage and expanded with compressed air. After complete drying the trachea and major bronchi were removed and the lung parenchyma was weighed.

In 15 additional dogs the following functions of the right and left lung were separately studied by means of a tracheal divider: hemilateral respiratory quotients, minute volumes, oxygen uptakes, physiologic dead spaces, alveolar volumes, functional residual capacities, and static chest compliances. There was a close correlation between these parameters and dry lung weights in the dog.

In the human, the weight ratios of single lungs and lobes to total lung weight was found to be quite constant. They were: right lung 53 per cent, left lung 47 per cent, right upper lobe 19.5 per cent, right middle lobe 8.3 per cent, right lower lobe 25.3 per cent, left upper lobe 22.4 per cent, and left lower lobe 24.6 per cent. These values correlate well with previous studies of hemilateral lung and lobar function.

Consequently it is possible to predict fairly accurately the loss of function from pneumonectomy or lobectomy. Differences between calculated loss of function and

that measured postoperatively can be assumed to represent a relative gain or loss in function of the remaining lung.*

*The Relationship of Dry Lung Weights to Pulmonary Function in Dogs and Humans. Walter H. Massion, Delmar R. Caldwell, Nancy A. Early and John A. Schilling. *Journal of Surgical Research* 2:287-292 (September) 1962.

STRESS AND CORONARY BLOOD FLOW

Changes in pulse rate, blood pressure, and coronary blood flow before and during interviews designed to induce emotional stress were observed in thirty male subjects ranging in age from 29 to 69 years.** Feelings of anger were aroused in nine, anxiety in five, depression in five, anger and anxiety together in four, and a combination of depression and anger in four. Three subjects showed little or no emotional reaction to the interview.

The pulse rate and blood pressure measurements were obtained using an ordinary sphygmomanometer, and blood flow through the coronary arteries was measured by recording the response of a scintillation counter placed over the precordium when a quantity of radioactive Diodrast was injected intravenously. These data were then used to calculate the cardiac output by the method of Sevelius and to determine the stroke volume and peripheral resistance. A control series in which

**Changes in Coronary Blood Flow and Other Hemodynamic Indicators Induced by Stressful Interviews. C. A. Adsett, W. W. Schottstaedt, and S. G. Wolf. *Psychosomatic Medicine* 24:331-336 (July-August) 1962.

light conversation replaced the stressful interview was obtained using eight healthy subjects.

Subjects who became angry showed significant increases in coronary blood flow, systolic and diastolic blood pressures and peripheral resistance. Anxiety increased coronary blood flow, cardiac output and systolic blood pressure. Anger and anxiety together increased the coronary blood flow, cardiac output, and raised the diastolic pressure and the peripheral resistance. Depression alone did not alter any of the hemodynamic factors measured, but when anger was associated with depression there was a rise in peripheral resistance and the systolic and diastolic pressures.

Coronary blood flow was found to increase in those circumstances in which an increased work load for the heart might be expected; i.e., anger and/or anxiety.

REVIEWER'S NOTE: Although the accuracy of the Sevelius-Johnson technique for measuring coronary blood flow is still regarded with some uncertainty, the results obtained in this study are remarkably consistent and can therefore be considered to be at least directionally valid. The large number of subjects in the study having diseases often thought to occur most frequently in patients with "reactive personalities" (11 with duodenal ulcer, four with essential hypertension, two with

neurodermatitis, and one alcoholic) makes one wonder if the results might be somewhat different if "normal" healthy subjects were studied in this fashion.

RECENT PUBLICATIONS FROM THE MEDICAL CENTER

Foreign Body in Wharton's Duct. E. A. Walker, Jr. Archives of Otolaryngology. 75: 274, 1962.

Effect of Chronic Heparin Administration on Serum Lipids, Lipoproteins, Nitrogen and Electrolyte Balance in Normal and Heparin-Responsive and Heparin-Unresponsive Hyperglycemic Subjects. R. H. Furman, R. P. Howard, and P. A. Alaupovic. Metabolism 11: 879, 1962.

Effects of Hemorrhage upon Forelimb Pressures, Weight, and Resistances in the Dog. F. Haddy, J. Molnar and J. Scott. Federation Proceedings 21: 120, 1962.

Atrophic Gastritis in Dogs. A. R. Hennes, H. Sevelius, T. Lewellyn. W. Joel, A. H. Woods, and S. Wolf. Archives of Pathology 73: 33, 1962.

Progress Report: Advances in Otosclerosis During 1960. J. v.D. Hough. Archives of Otolaryngology. 75: 81, 1962.

Reprints of the above publications are usually available on request from the senior author, c/o Mrs. Joan Campbell, Veterans Administration Hospital, 921 N.E. 13th Street, Oklahoma City, Oklahoma.

OSMA REGIONAL POSTGRADUATE COURSE*

"THE LIVER"

Lake Texoma Lodge

March 26, 1963

AFTERNOON

- 4:30 p.m. New Aspects
a. Vascular Anatomy and Physiology
b. Metabolism
c. Evaluation of Hepatic Function
5:30 p.m. Infectious Hepatitis
6:00 p.m. Hepatic Coma

EVENING

- 7:30 p.m. Surgery in Liver Disease
8:00 p.m. Problem Case Conference
1. Cirrhosis with Ascites
2. Postoperative Gallbladder Disease
3. Esophageal Varices

Instructors: G. Victor Rohrer, M.D., Jack D. Welsh, M.D., G. Rainey Williams, M.D.

REGISTRATION FEE \$7.50 (Includes Dinner)

AAGP Credit—4 Hours—Category 1

OSMA Regional Postgraduate Course on "The Heart" will be held March 19, 1963, at the Palomino Cafe, Woodward, Oklahoma.

OSMA Health Protection Week Set

A major effort to improve the immunization protection of Oklahoma citizens will be made by the Oklahoma State Medical Association next month.

The OSMA Council on Public Health, in cooperation with the Council on Public Policy, has named the week of April 8-14 as "Health Protection Week" and is launching an intensive public information program to remind Oklahomans of the safety and efficacy of proper immunization. Immunization against smallpox, diphtheria, tetanus, whooping cough and poliomyelitis will be stressed in the publicity efforts.

Citizens will be urged to visit physicians' offices and have their level of protection brought up to date. A secondary theme of the promotional materials will portray the physician's interest in *preventing* rather than *treating* disease.

All materials associated with the promotion are now in preparation at the OSMA Executive Office and will soon be distributed to county medical societies and news media. The public service-public relations project was initiated last May by the OSMA House of Delegates.

Plans Changed

Doctor Paul Erwin's Council on Public Health has informed county medical society presidents that the original plans for the public education program have been recently revised.

Instead of the previously announced month-long campaign involving considerable county society cooperation, the revised program will concentrate all efforts into the span of a week and less responsibility will be delegated to the county organizations.

"We didn't want to change our plans," Doctor Erwin said, "but the response we received to the original announcement indicated that a change was in order if we were to achieve maximum effectiveness.

"However," he added, "we are optimistic that we will receive 100 per

cent physician-cooperation in this worthwhile project—interest in the program is picking up every day."

The OSMA Function

Publicity materials for "Health Protection Week" will be prepared and distributed by the OSMA Executive Office. These plans include:

Newspaper Publicity. Six news releases on "Health Protection Week" will be distributed to all daily newspapers in Oklahoma, and three releases will be sent to the weekly papers. Thus, the dailies will have sufficient material to publicize the event every day during "Health Protection Week" and weeklies will have material to use before and during the campaign.

In addition, the popular health column of the Oklahoma State Medical Association, "A Message From Your Doctor," will be devoted to the subject of immunization during the weeks beginning March 31st and April 8th. The column is regularly appearing in fifty daily and weekly newspapers.

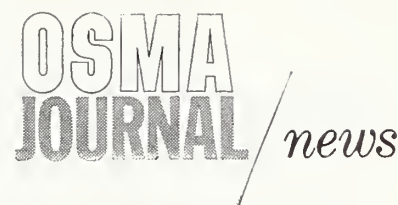
Fact sheets on "Health Protection Week" will be distributed to the editors of all state newspapers, who will be urged to support the effort through the editorial sections of their publications.

Television and Radio. All television and radio outlets in the state will receive spot announcements for use in promoting the program. TV stations will be issued five 10-second and five 20-second announcements, as well as a one minute film presentation featuring J. Hoyle Carlock, M.D., OSMA President.

Radio stations will receive twenty-five spot announcements, five for each of the diseases covered by the program.

Role of Counties, Individuals

To provide for the necessary local tie-in to the statewide promotion, the OSMA will furnish the following materials for use by county medical societies and individual physicians.



Newspaper Ad. A sufficient number of newspaper ad mats for all papers within a county's boundaries will be mailed to the president of each society. In most cases, the newspapers will probably provide free space for the promotion of the public service project. The mats will be arranged to permit the insertion of the county society's name as a sponsoring organization.

Waiting Room Poster. Posters on "Health Protection Week" will be available for every doctor's office in the state through bulk shipment of the posters to the county society president.

Health Record Card. Each county medical society will receive wallet-size "shot record" cards in sufficient quantity to distribute 250 cards to each physician in the county. The physicians' nurse can post the type of immunization and the date on the card, then give it to the patient as a personal record of immunization.

"Reminder Card." For county medical societies that have ordered them in advance, quantities of reminder cards will be issued by the OSMA. These cards are designed as "statement stuffers" and contain a message urging patients to keep their immunization protection up to date. Over 75,000 of these cards have been ordered.

Cooperation Urged

"The Council on Public Health believes 'Health Protection Week' to be an extremely valuable public service activity on the part of Oklahoma physicians," Doctor Erwin said. "If doctors throughout the state will give the project the necessary effort, we will be taking a step forward in establishing the base for an improved public relations program. At the same time, we will be providing much-needed protection for our patients." □

"Medicare" Hits Congress

President Kennedy is back on the "Medicare" soap box.

In his February 21st message to Congress, he outlined his social security proposal for health care of the aged. The mislabeled merchandise (very little medical care is provided) was grabbed up the same day by Senator Clinton P. Anderson (D., N.M.), who introduced it as S.880, and by Representative Cecil King (D., Calif.), who introduced it in the House of Representatives as H.R. 3920.

The proposal is basically the same as the Anderson-Javits bill rejected by the Senate last year.

Under the plan, the beneficiary would have three options as far as hospitalization is concerned. (1) He could take 90 days of hospitalization subject to a \$10.00 a day deductible for the first nine days (the minimum deductible is \$20.00); or (2) He could get up to 180 days of hospitalization if he would agree to pay the first two and one-half days of average cost; or, (3) He could receive 45 days of hospitalization without a deductible.

In addition, the bill would provide 180 days of nursing home care after transfer from a general hospital; all costs above the first \$20.00 for hospital outpatient diagnostic services; and 240 home health visits during a calendar year.

The bill is somewhat expanded from last year's version in that persons not eligible for social security (about three million) would be provided for through general revenue taxation.

Tax Jump

"Medicare" for social security eligibles would be financed through a rate increase in social security taxes of one-half per cent (one-fourth per cent employee, one-fourth per cent employer) and through an increase

in the taxable wage base from the present \$4,800 a year to \$5,200 a year.

Kennedy said the health care program would cost \$5.6 billion for the first four years, or an annual average of \$1.4 billion (The AMA Department of Economic Research set the first year cost in 1965 at about \$2.3 billion, and calculated that 31 states would pay more in social security and general taxes than they could anticipate in benefits returned per aged individual).

Oklahoma Senators Won't Sign

Senator Anderson tried to get all democratic senators to join him in co-authoring the bill. Thirty-four did, but not Oklahoma Senators Mike Monroney and J. Howard Edmondson.

Alert to Anderson's plan, the OSMA contacted both state senators and was assured they would not place their names on the measure.

Outlook

Legislative experts are once again saying that the key to the fate of "Medicare" rests with the House Ways and Means Committee, whose chairman, Representative Wilbur Mills (D., Ark.), has steadfastly opposed similar efforts.

However, the Administration has liberalized Mills' committee during recent months and the voting margin against "Medicare" is now thought to be only one vote. A total of 12 out of 25 members of the committee are believed to be in favor of the bill.

In the Senate, the Finance Committee still looms as an obstacle to "Medicare," but the less rigid rules of the higher house make it possible for the committee to be bypassed, while such a maneuver in the House of Representatives is most unlikely. Observers set the Senate Finance Committee vote on the bill at ten opposed to seven in favor.

State Action

The OSMA's Federal Legislative Committee is now making plans to meet the challenge to come, but is

carefully appraising the optimum timing of a concerted statewide campaign.

It is reported that the House Ways and Means Committee will not consider "Medicare" until disposition of Mr. Kennedy's tax reform legislation is made, and guesses are that this will not be accomplished until summer. Even then, Representative Mills may stall for time to the extent that "Medicare" won't become a big issue until 1964.

In the meantime, the OSMA committee is busy building a network of communications throughout all counties in the state. Nearly all county medical societies have reported the memberships of their "Legislative Action Committees."

Also, the state association will be represented at a special AMA legislative conference scheduled for Chicago on April 20th and 21st. Attending will be J. Hoyle Carlock, M.D., President; Rex E. Kenyon, M.D., Chairman, Council on Public Policy; Worth M. Gross, M.D., Chairman, Federal Legislative Committee; and, Don Blair, Executive Secretary. □

Triplett Honored



T. Burke Triplett, M.D., Mooreland, (pictured right, above) was honored by the Oklahoma State Medical Association at the Northwest Counties Medical Society meeting, December 13, 1962. Presentation of a Fifty-Year Pin was made by C. W. Tedrowe, M.D., Woodward, (left) who had been similarly honored in 1949.

OSMA Annual Meeting Plans Announced

Tulsa Hosts Three Days of Scientific, Socio-Economic and Social Events

For Oklahoma physicians all roads will lead to Tulsa on May 3-5 as the Oklahoma State Medical Association stages its 57th Annual Meeting, a three-day mixture of scientific medicine, social events and business activities.

Highlights of the convention, scheduled for the first time on a Friday, Saturday and Sunday, will include:

1. Presentations by sixteen nationally known distinguished guest speakers in all fields of medicine and surgery.

2. The President's Inaugural Dinner Dance on Saturday, May 4, featuring four hours of dancing to the music of Leon McAuliff and His Cimarron Boys, ABC recording artists and television personalities.

3. The Fireside Conferences of the American College of Chest Physicians on Friday evening, May 3, with roundtable discussions in seven major areas of general and thoracic medicine.

4. A repetition of the popular Americanism Forum, also on Friday, May 3, with significant discussions of current trends in medical economics, government, federal legislation, taxation and political ethics. Principal guest speaker will be Mr. Leonard E. Read, dynamic President of the Foundation for Economic Education, Irvington-On-Hudson, New York.

5. The annual business meeting and election of officers of the OSMA House of Delegates on Friday, May 3. The OSMA Board of Trustees will meet on Thursday, May 2.

6. Two important scientific symposiums of wide interest to physicians: Management of Disabling Pain of Non-Articular Origin, scheduled for May 4, and Rehabilitation of the Cardiac Patient, a feature of May 5.

7. The Doctors Hobby Show, sponsored by the Woman's Auxiliary to the Oklahoma State Medical Association.

8. The Annual Golf Tournament and Dinner of the Oklahoma State Medical Association at Oaks Country Club on Friday, May 3.

9. Forty technical exhibits by leading pharmaceutical firms, surgical and x-ray supply dealers, publishers, and other companies whose products and services are of interest to physicians.

10. Numerous specialty group meetings and the annual sessions of the Woman's Auxiliary to the Oklahoma State Medical Association.

All sessions will be at The Mayo, Tulsa's largest and most beautiful hotel. Reservations may be made by writing directly to The Mayo, Fifth and Cheyenne, Tulsa, specifying dates of arrival and departure and type of accommodations desired.

Speakers Named

Donald L. Brawner, M.D., General Chairman, said the following had accepted invitations to address the scientific sessions:

William W. Scott, M.D., Professor of Urology, Johns Hopkins School of Medicine, Baltimore, Maryland.

Alfred Goldman, M.D., Professor of Medicine, St. Louis University

School of Medicine, St. Louis, Missouri.

James T. Grace, Jr., M.D., Assistant Professor of Surgery, University of Buffalo School of Medicine, Buffalo, New York.

Robert B. Greenblatt, M.D., Professor of Endocrinology, Medical College of Georgia, Augusta, Georgia.

Herman K. Hellerstein, M.D., Assistant Professor of Medicine, Western Reserve University School of Medicine, Cleveland, Ohio.

John M. Knox, M.D., Associate Professor of Dermatology, Baylor University College of Medicine, Houston, Texas.

Theodore C. Panos, M.D., Chairman of the Department of Pediatrics, University of Arkansas School of Medicine, Little Rock, Arkansas.

James L. Goddard, M.D., Assistant Surgeon General and Chief of the Communicable Disease Center, Atlanta, Georgia.

Norman Simon, M.D., Radiologist, Mount Sinai Hospital, New York, New York.

James O. Elam, M.D., Associate Professor of Anesthesiology, University of Buffalo School of Medicine, Buffalo, New York.

J. T. MacDougall, M.D., Assistant Professor of Surgery, University of Manitoba School of Medicine, Winnipeg, Manitoba.

William J. McGanity, M.D., Chairman of the Department of Obstetrics and Gynecology, University of Texas School of Medicine, Galveston, Texas.

John H. Moe, M.D., Chairman of the Department of Orthopedic Surgery, University of Minnesota School of Medicine, Minneapolis, Minnesota.

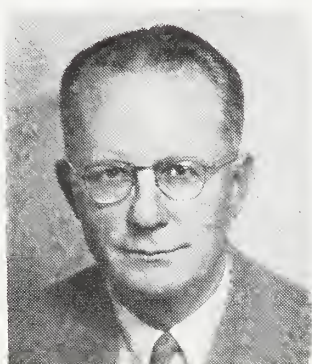
Lloyd M. Nyhus, M.D., Associate Professor of Surgery, University of Washington School of Medicine, Seattle, Washington.

L. Maxwell Lockie, M.D., Chairman of the Department of Therapeutics, University of Buffalo School of Medicine, Buffalo, New York.

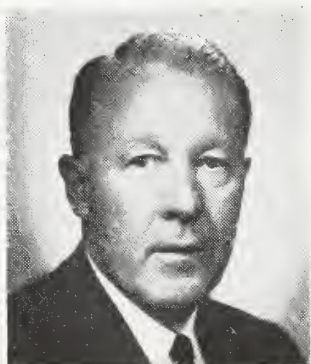
Tickets to the President's Inaugural Dinner Dance are now on sale and may be ordered in advance from the Tulsa County Medical Society, B9 Medical Arts Building, Tulsa. The



GOLDMAN



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price of \$7.50 per person will include the social hour, dinner, inaugural program and the Leon McAuliff dance. Attendance will be limited to 400 persons. Checks should be made payable to "Oklahoma State Medical Association."

J. Hoyle Carlock, M.D., will step down as president and his successor will be inaugurated during the dinner-dance event.

The Americanism Forum, which drew a standing-room-only attendance in Oklahoma City last year, will open with a luncheon meeting on Friday, May 3, and continue throughout the afternoon. In addition to Mr. Read, other speakers will include Mr. Steve Stahl, Executive Vice-President of the Oklahoma Public Expenditures Council, Oklahoma City, and Mr. T. J. Harris, General Manager of Aero-Commander, Inc., Oklahoma City. Doctor Worth M. Gross of Tulsa will be general chairman of the event.

Fireside Conferences

Also being repeated by popular demand are the Fireside Conferences on Friday evening, May 3, jointly sponsored by the American College of Chest Physicians. All Oklahoma doctors are invited and urged to attend. Doctor Alfred Goldman of St. Louis, Vice-President of the College, will be guest speaker at a buffet dinner meeting opening the Conference. Afterwards, doctors will visit seven roundtables at which panelists will discuss current items of interest in specific areas of medicine and surgery. Physicians may participate in the discussion and ask questions.

The seven roundtables and their participants are:

Radiological Aspects of Chest Disease: Walter E. Brown, M.D., Tulsa, Chairman; D. W. McCauley, M.D., Okmulgee; Vernon Lockard, M.D., Bartlesville; Floyd J. Moorman, M.D., Oklahoma City; Rayburne W. Goen, M.D., Tulsa; and Norman Simon, M.D., New York, New York.

Cardiovascular and Chest Surgery:

Robert M. Shepard, Jr., M.D., Tulsa, Chairman; Allen Greer, M.D., Gilbert Campbell, M.D., and John R. Danstrom, M.D., Oklahoma City; and Samuel Turner, M.D., and Robert G. Tompkins, M.D., Tulsa.

Emphysema and Bronchitis: George Winn, M.D., Oklahoma City, Chairman; Richard M. Burke, M.D., Oklahoma City; and N. C. Gaddis, M.D., Sol Wilner, M.D., Felix R. Park, M.D., and J. C. Devine, M.D., Tulsa.

Respiratory Emergencies: Perry F. Crawford, M.D., Tulsa, Chairman; Robert S. Ellis, M.D., and Charles E. Shopfner, M.D., Oklahoma City; Robert L. Anderson, M.D., and Craig S. Jones, M.D., Tulsa; and James T. Elam, M.D., Buffalo, New York.

Cardiology: Robert H. Bailey, M.D., Oklahoma City, Chairman; Leon Freed, M.D., Stillwater; Homer A. Ruprecht, M.D., C. S. Lewis, Jr., M.D., Edward W. Jenkins, M.D., Tulsa; and Alfred H. Goldman, M.D., St. Louis, Missouri.

Current Trends in Cancer Management: Leonard T. Eliel, M.D., Oklahoma City, Chairman; J. M. Murphree, M.D., Ponca City; Rainey Williams, M.D., Oklahoma City; Abe Oyamada, M.D., and Richard A. Liebendorfer, M.D., Tulsa; and James T. Grace, M.D., Buffalo, New York.

Technical Problems in Gastric Surgery: Merlin K. DuVal, M.D., Oklahoma City, Chairman; Irwin Brown, M.D., Oklahoma City; George M. Brown, M.D., McAlester; Edward L. Moore, M.D., Robert G. Perryman, M.D., and Martin Leibovitz, M.D., Tulsa.

Coffee, beer and soft drinks will be served during the roundtable sessions.

Commercial exhibits will be divided between the Lobby and 16th Floor of The Mayo. All booth space has been sold.

Many specialty groups have scheduled meetings during the convention, most to meet on Sunday afternoon, May 5, following the close of the OSMA sessions at 1:00 p.m.

A record attendance of Oklahoma doctors is anticipated. □

... AND WE'LL KEEP THEM
HEALTHY ALL SUMMER!



36TH YEAR

- Coaching, competing, and conditioning in all sports.
- White and Buffalo River canoe trips.
- Swimming, diving, water skiing, Scuba diving.
- Riflery, archery and fishing.

— ● —

IN THE HEART OF THE
OZARKS
ON LAKE TANEYCOMO
BRANSON, MISSOURI

— ● —



5TH YEAR

- Instruction and play in land sports.
- River and lake canoe trips.
- Art, dance, and crafts.
- Swimming and water skiing.
- Riflery and archery.
- Drama, Poise and Charm.

— ● —

TWO FIVE WEEK TERMS
Ages: 8 thru 16

— ● —

Write for catalog, movie dates, and list of Oklahoma Patrons:

Winter Address
C. G. "SPIKE" WHITE
702 Thomas Lane
College Station, Texas

Oklahoma County Immunizes 313,713 Persons In First Clinic

Officials of Oklahoma County Medical Society's first mass immunization using Type 1 Sabin oral vaccine for poliomyelitis termed the two February clinics successful. A total of 313,713 persons were immunized in clinics held throughout the county.

This provided 74 per cent coverage, "not as high a figure as we had hoped to reach but sufficient to assure us of a high degree of community protection, especially if the number attending the Type II clinics in March and the Type III clinics in April is as high, and we are definitely pleased with the results," W. J. Dowling, M.D., project director said.

Children in the age group six through 14 set the pace with 96.5 per cent participation, and when combined with the age group one through 14, the percentage is a highly commendable 88.1, he pointed out. Those over 40 had the poorest record of attendance, 46.3 per cent.

The clinics were manned by 130 Oklahoma County Medical Society physicians on clinic days, February 10 and 17. Through the cooperation of school authorities, 130 schools in all sections of the county were utilized as clinic sites.

Nearly 2,700 volunteer workers gave eight hours of time on each of the clinic dates. Included were members of the Red Cross, the Parent Teachers Association, nurses, phar-



Vernon D. Cushing, M.D., (left) president of the Oklahoma County Medical Society and W. J. Dowling, M.D., project director, explain details of the "Stamp Out Polio" campaign to county medical society auxiliary members. They were volunteers in the project, handling much of the office detail work involved in coordinating the efforts of over 2,700 clinic-site volunteers.

macists, physicians, Junior Chamber of Commerce, medical society auxiliary, high school and university students, members of Citizens Banders, Incorporated (car radio operators) and others.

Dates for the Type II clinics are March 17 and 24, and Type III will be given April 21 and 28.

A donation of 25 cents per dose was requested, but not required, in order to meet expenses of the operation and almost without exception this amount was contributed. □

Postgraduate Series Offered Through TV

The Office of Postgraduate Education of the University of Oklahoma Medical Center announces a series of open channel television programs

will be presented April 4 through June 13 for the physicians of Oklahoma.

These programs have been developed through the joint efforts of the Medical Center, the Oklahoma State Medical Association and the Oklahoma Educational Television Authority following an experimental series produced last year.

Programs will be telecast at 9:45 p.m. each Thursday over Channel 11, KOED-TV, Tulsa, and Channel 13, KETA-TV, Oklahoma City.

The calendar is as follows:
April 4—Acute Renal Failure
April 11—The Nephrotic Syndrome
April 18—Pyelonephritis
April 25—Radiology in Health and Disease—Part I
May 2—Radiology in Health and Disease—Part II
May 9—Radiology in Health and Disease—Part III
May 16—Complications after Cholecystectomy
May 23—Physical Examination of the Heart—Part I
May 30—Physical Examination of the Heart—Part II
June 6—Physical Examination of the Heart—Part III
June 13—Aspirin Poisoning in Children

An announcement of these programs will be sent to every physician's office. □



Signing in to get Type I Sabin oral vaccine—a typical scene at one of the school-clinics in Oklahoma county in February.

3,000 To Hear AMA Leader in Oklahoma City

When AMA President-Elect Edward R. Annis, M.D., addresses a "Town Hall Meeting" in Oklahoma City on April 23rd, officers of the sponsoring Oklahoma County Medical Society hope to assemble an audience exceeding 3,000 state citizens.

The event will be held in the huge Municipal Auditorium at 8:00 p.m. Physicians, wives and opinion leaders from other professions and walks of life will gather for a public forum on one of the key domestic issues facing Congress—President Kennedy's proposal to provide health care through the mechanism of social security.

Doctor Annis is the most eloquent spokesman to come along in the history of organized medicine. He is well informed on the legislation in question and is experienced as a speaker and debater.

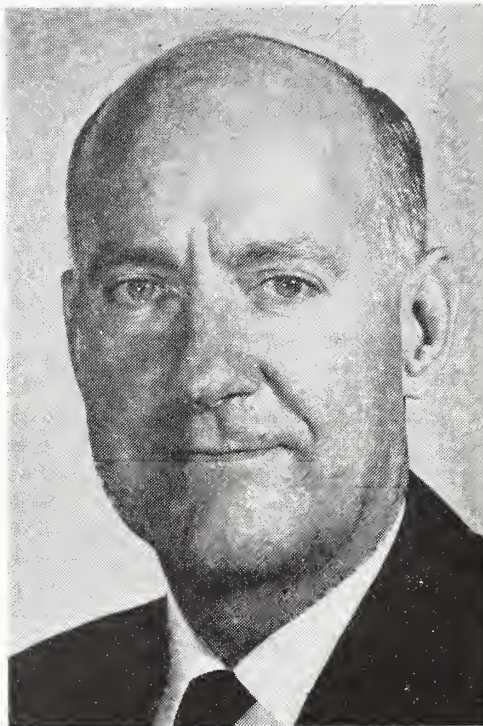
Prior to his election as AMA President-Elect, Doctor Annis served as head of the national group's speakers bureau and barnstormed the nation on behalf of U.S. doctors. He has successfully debated such notables as Walter Reuther on network television. Last spring, he starred in a half-hour national telecast on "Medicare," sponsored by the American Medical Association.

All Doctors Invited

Every physician in the state of Oklahoma is being urged to attend the "Town Hall Meeting." Oklahoma City physicians will organize groups of non-medical friends and neighbors and bring them to the meeting. Each physician is being asked to produce eight or ten friends.

Out-of-town physicians are also encouraged to bring other couples with them. Moreover, it is suggested that they arrange to meet their state senators and representatives in Oklahoma City, have dinner with them, then take them to hear Doctor Annis.

Doctor Annis is expected to commend the members of the Oklahoma Legislature for the outstanding job they have done in implementing the Kerr-Mills health care programs.



EDWARD R. ANNIS, M.D.

The AMA has long favored this approach over a completely federal plan such as "Medicare."

Chartered Bus for County Societies?

Another suggestion being made to county medical societies is that of chartering a special bus to bring all members of the society and their friends to the Oklahoma City event. The Oklahoma County Medical Society will assist in making dinner arrangements for such groups.

Admission to the Municipal Auditorium will be by ticket only. Free tickets and further information on the April 23rd "Town Hall Meeting" may be obtained by contacting the Oklahoma County Medical Society, Medical Arts Building, Oklahoma City. Telephone CEntral 6-3064. □

Life Insurance Premiums Reduced

The Group Insurance Committee of the OSMA has announced a five per cent reduction in premium for physicians presently insured under the association's group term life insurance program, written by the Massachusetts Mutual Life Insurance Company. This is the second year for a reduced rate.

AOA Lecture Announced

Ivan L. Bennett Jr., M.D., Baxley professor of pathology at Johns Hopkins University School of Medicine and pathologist-in-chief at Johns Hopkins Hospital, will visit the University of Oklahoma Medical Center May 10-11 under sponsorship of Alpha Omega Alpha and the Oklahoma Association of House Staff Physicians, with support of the Oklahoma State Heart Association.

Doctor Bennett will give the annual spring AOA Lecture at 4 p.m., Friday, May 10, in the Medical School Auditorium. All physicians are invited to attend. He also will speak that evening before the AOA membership following the honor medical society's initiation banquet at the Faculty House.

The guest speaker will address interns and residents during their annual scientific program Saturday, May 11. □

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Oklahoma Citizens Alerted to Glass Door Hazard

The OSMA Safety Committee recently took steps to alert the citizens of Oklahoma to the hazardous household danger of sliding glass doors, floor-to-ceiling windows and shower stalls equipped with poor quality glass.

In an effort to notify the state's population of the growing problem, Lynn H. Harrison, M.D., Safety Committee Chairman, reported that a press release on the subject has been circulated to every state newspaper as well as to all radio and television news departments.

Doctor Harrison quoted the first paragraph of the news release telling of a Seattle, Washington glass door victim. "On the front page of the July 13, 1961, edition of the Seattle Times newspaper, a heartbreaking article read, 'Robin Joan Day, 19, University of Washington student, was dead on arrival at Swedish Hospital at 12:30 o'clock this morning, an hour after she ran through a sliding glass door on the porch of her home.

" 'Robin had been sleeping on the porch with her 15-year-old sister when the telephone rang. Robin ran to answer it, not realizing the door was closed. She crashed through the plate glass, suffering a deep cut on her thigh. She died from loss of blood'."

The safety chairman revealed that young Robin's tragic misfortune has been duplicated hundreds of times throughout the nation by youngsters and adults alike. "Because of increasing reports of glass door injuries in Oklahoma," Harrison said, "the Safety Committee is attempting to eliminate the hazard in new construction and, at the same time, encourage present homeowners to replace low quality glass with approved safety glass. The news release was written and circulated for the purpose of gaining public support for our convictions.

County Societies Contacted

Copies of the news release were mailed to all county medical society

presidents. Each president was encouraged to contact the newspapers, radio and TV stations within his county and encourage them to use the release.

Moreover, he was supplied with a copy of a sample building code regulation and urged to present it for local consideration. This regulation is intended to be used as a guide for improving city ordinances. The suggested ordinance would require the use of laminated, tempered or wire reinforced safety glass in sliding or swinging doors, floor to ceiling installations and shower stalls.

The Safety Committee disclosed, in the news release, that the Federal government was taking steps to control the surging rate of severe glass injury cases. As of April 1, 1963, all residential construction financed through FHA or Veterans Administration guaranteed loans will be required to have safety glass in sliding glass doors, floor-to-ceiling installations and shower stalls.

"Despite the government's interest," the release quoted Doctor Harrison as saying, "the problem will not be completely solved until city building codes are changed to require safety glass for all new construction, regardless of how the construction is financed. Home accidents of this nature are unnecessary and preventable, and we have failed in our responsibility as parents if we permit any more children to be hurt or killed because of our inaction to correct a recognized hazard of serious consequences."

In an effort to gain cooperation and understanding, the Safety Committee sent copies of the news release, with a letter of transmittal, to the board of directors of the Oklahoma City Homebuilders Association. The letter of transmittal alerted the builders to the interest of the OSMA Safety Committee. They were requested to join with the OSMA in seeking necessary changes in the building codes of cities and towns throughout the state.

Health Commissioner Lends Support

Kirk T. Mosley, M.D., Oklahoma's Commissioner of Health, alerted all county health department units to the problem and urged them to give assistance wherever possible to the county medical societies.

Doctor Harrison reported that the State Health Department contacted a number of other safety organizations and supplied them with the safety committee's information.

"We will continue to emphasize the value of safety glass in preventing unnecessary injury and death," the chairman said, "and, encourage every member of the OSMA to report injuries of this nature to the OSMA executive office. Moreover, physicians are urged to lend assistance at the local community level toward the solution of this well-recognized health problem." □

WAKE UP . . .

(Continued from Page 86)

the unnecessary duplication of facilities, whether private or public. When that day comes we will have lost the freedom of medicine that we know today and the U.S. Public Health Service and the State Health Department will be our masters.

If Areawide Planning is necessary, get your local doctors on the technical staff and make decisions and recommendations that are workable to your local area. Don't let this project be taken over by a group of so-called "experts," as the best survey of a community's medical needs can be obtained by a committee of local private practicing doctors and other interested people.

We don't want government control of hospitals or socialized medicine, but if we doctors don't wake up and catch these cancer cells before they can grow, we will get it by default.—Francis A. Davis, M.D. □

DEATHS

ROBERT M. HOWARD, M.D.

1878-1963

Robert M. Howard, M.D., emeritus professor of surgery at the University of Oklahoma School of Medicine, died February 22, 1963 in Oklahoma City.

The retired, 84-year-old physician who came to Oklahoma when he was 11 years old, graduated from the University of Michigan School of Medicine in 1901.

Doctor Howard joined the faculty of the Epworth Medical College which later became the OU Medical School where he was professor of surgery from 1934 to 1946.

In addition to his private practice, Doctor Howard was affiliated with many medical organizations. Among these were the International College of Surgeons, the American Goiter Society, the American Board of Surgeons of which he was a diplomate, the Oklahoma City Surgical Society and the Oklahoma City Academy of Medicine. He served as chairman of the Southern Medical Association in 1937 and as governor of the American College of Surgeons from 1939 to 1947. He had been listed in Who's Who in America since 1938.

Recognizing his devotion to the practice of medicine and his years of service to the profession, the Oklahoma State Medical Association had honored Doctor Howard twice. In 1948, he was awarded a Life Membership and in 1951, he received a Fifty-Year Pin.

ERNEST DALE MITCHELL, M.D.

1925-1963

Ernest Dale Mitchell, M.D., 36-year-old Oklahoma City physician, died February 15, 1963.

Mitchell, a native of Texas, came to Oklahoma with his parents in 1933. After graduating from the University of Oklahoma School of Medicine in 1954, he established his practice in industrial medicine in Oklahoma City.

CURT VON WEDEL, M.D.

1885-1963

A retired Oklahoma City plastic surgeon, Curt Von Wedel, M.D., died March 6, 1963.

A native of Dobbs Ferry, New York, Doctor Von Wedel graduated from New York University School of Medicine in 1907. He did postgraduate work both in New York and Europe, specializing in plastic surgery. He came to Oklahoma City in 1911.

Doctor Von Wedel was certified by the American Board of Plastic Surgery, was a member of the American College of Surgeons and a member of the British Surgical Society.

In 1958 he was presented a Life Membership in the Oklahoma State Medical Association in appreciation of his years of service to the profession.

L. H. McCONNELL, M.D.

1871-1963

L. H. McConnell, M.D., who had practiced longer in Jackson county than any other physician, died February 14, 1963.

The 91-year-old physician was born in Marysville, Tennessee and received his medical degree from the Chattanooga Medical College in 1901. After a few months of practice in Tennessee, Doctor McConnell moved to Oklahoma, establishing his practice in the community of Elmer. In 1917, he moved to Altus.

In semi-retirement at the beginning of World War II, Doctor McConnell assumed full time practice again and continued active until he was 83.

Dual honors were given to Doctor McConnell in 1950 when the Oklahoma State Medical Association presented him with a Life Membership in recognition of his years of devoted service to the profession. He also received a Fifty-Year Pin for over a half century of service to humanity.

RUSSELL H. LYNCH, M.D.

1895-1963

A practicing physician in Hollis since 1927, Russell H. Lynch, M.D., died February 3, 1963.

The 67-year-old physician was born in Hennessey, Oklahoma. After graduating from the University of Oklahoma School of Medicine in 1926, Doctor Lynch established his practice in Hollis.

In addition to his medical affiliations, Doctor Lynch participated in many city and state activities, having served as a member of the Twenty-seventh State Legislature in 1959.

JOHN F. CAPPS, M.D.

1886-1963

John F. Capps, M.D., retired, Oklahoma physician, died in Orlando, Florida, February 26, 1963.

The 74-year-old doctor graduated from the Chicago College of Medicine and Surgery in 1914. He practiced in Bowlegs, Oklahoma until 1943 when he moved to Oklahoma City and established his practice in industrial medicine.

For his service to humanity and the medical profession, Doctor Capps was awarded an Honorary-Life Membership by the Oklahoma State Medical Association in 1959.

J. SHERWOOD JACOBY, M.D.

1880-1963

A physician in Commerce, Oklahoma since 1924, J. Sherwood Jacoby, M.D., died February 16, 1963.

A native of Jersey City, New Jersey, Doctor Jacoby graduated from Atlanta College of Physicians and Surgeons in 1910. A large portion of his practice in Commerce was devoted to pediatrics.

In 1955, Doctor Jacoby was recognized for his devotion to the medical profession when the Oklahoma State Medical Association awarded him a Life Membership. In 1960, he was honored the second time by the association when he received a Fifty-Year Pin for over a half century of active practice. □

BOOK REVIEWS

CONFERENCE ON THE BIOLOGY OF CONNECTIVE TISSUE CELLS, Sponsored by The American Rheumatism Association, The Arthritis and Rheumatism Foundation, and The National Institute of Arthritis and Metabolic Diseases, Published by The Arthritis and Rheumatism Foundation, New York, 1962, pp. 241, \$6.00.

Students of connective tissue are well aware of the lack of information and growing interest in connective tissue cells themselves, as opposed to their amorphous or, especially, their fibrous products. This conference report deals largely, not entirely, with cells in tissue culture and therefore their biology, often their metabolism. Specialists in pathology (E. R. Benditt), biochemistry (Albert Dorman) and molecular structure (F. O. Schmitt) here and there round out some aspects which are important for a good picture of such cell groups as are found in

connective tissue. It might be said that this conference was dedicated to living cells as much as possible.

There are four main categories of individual articles, poorly organized in the reviewer's opinion: major approaches to study of CT cells, general use of cell cultures, the fibroblast and its relationship to other CT cells, and specialized functions of CT cells. Probably every article will have something of interest for some readers and those examined most closely by the reviewer were average to excellent, certainly accurate enough. The very short discussion summaries are particularly good. Individual references are often inadequate, incomplete, or not even up to date.

Scientific investigators should more and more demand that sponsors of the many and rapidly multiplying symposia develop a much higher operating code than has now evolved. The quality of the Annals of the New York Academy of Sciences is suggested as a model. In the present

conference report one has the feeling that he has read the same thing by the same author several times. Add to this the lack of any index at all, which is becoming popular, and the conference report loses much of its value.—*John W. Kelly, Ph.D.*

THE TREATMENT OF HYPERTENSION, Sir George White Pickering, William Ian Cranston, and Michael Andrew Pears, Charles C. Thomas, Publisher, Springfield, Illinois, 1961, pp. 175, \$7.00.

Sir George Pickering has long been associated with clinical studies and therapy of hypertensive diseases, and his publications and lectures are well known in this country.

This small book provides an epidemiologic attitude to hypertension, with a scant look at etiologic mechanisms, before launching into pharmacologic assessment with limited physiologic support.

The therapies summarily consid-

DOCTORS' HOBBY SHOW

ANNUAL MEETING

Oklahoma State Medical Association

MAYO HOTEL

MAY 3-5, 1963

Application for Hobby Show Space

DESCRIBE EXHIBIT INCLUDING INFORMATION AS TO SIZE, SHAPE AND VALUE (INSURANCE IS PROVIDED) _____

IMPORTANT: Deliver exhibit to Mayo Hotel after noon May 2 or early morning, May 3. It will be personally attended at all times. The transportation is your responsibility. Exhibit must be picked up not later than May 6. Send application to:

Mrs. Frank L. Flack
State Chairman
1747 S. Florence Avenue
Tulsa 4, Oklahoma

ered include sympathectomy, adrenalectomy and low salt diet. One chapter is devoted to hypotensive compounds now rarely used. Also included are lengthy discussions of rauwolfia alkaloids, ganglionic blocking agents, adrenolytic and sympatholytic agents, and chlorothiazides.

In the considerations for therapy the authors emphasize that conclusions reached are based on personal judgements. This reflects the inability of modern physicians to adequately state clear cut lines of whom to treat and how best to do it; each patient is a special problem.

This book is a brief and sufficient reference for someone not too involved with hypertensive patients who wishes to review modern treatment as seen through Oxonian eyes.—C. G. Gunn, M.D.

ADRENERGIC MECHANISMS. Ciba Foundation Symposium. Edited by J. R. Vane, G. E. W. Wolstenholme, and Maeve O'Connor, Little, Brown and Company, Boston, 1960, pp. 632.

The proceedings of this international symposium present a detailed and comprehensive review of current knowledge of the origin, fate, and action of the catecholamines by a notably distinguished group of authors.

Additionally included are a review of the anatomy and histology of chromaffin tissue, two papers on the use of amine oxidase inhibitors in psychiatry, and four papers on the adrenergic inhibitors, Ganethidine and Bretylium. The latter are disappointing in that these presentations antedate any wide spread use of these agents in man and are thus largely confined to pharmacologic data in laboratory animals. This is due to the inevitable lag between presentation and publication.

In general, the volume is well edited and indexed and should be of use to the pharmacologist and the physiologist.—A. W. Pierce, Jr., M.D.□

Miscellaneous Advertisements

G.P., 17 YEARS experience, with some training and special interest in surgery, desires to quit solo work and unite with associate or small group. Contact Key A, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

NEWLY REDECORATED office space near hospitals, 436 N.W. 13th Street, Oklahoma City. Telephone CE 5-6461 or JA 5-2008.

FOR SALE: General practice office, fully equipped. One partner taking further training, the other retiring. Contact Agnew A. Walker, M.D., Wewoka, Okla.

PHYSICIAN, presently interning, desires Oklahoma location to establish private practice. Contact Earl B. Gehrt, M.D., Broadlawns Polk County Hospital, 18th and Hickman Road, Des Moines, Iowa.

BOARD ELIGIBLE (OB-GYN) physician desires group practice in city over 50,000. 1952 graduate of Harvard. Contact Ben Z. Taber, M.D., 4900 Marie Tobin, El Paso, Texas.

GP ASSOCIATE wanted in new clinic in Hollis, Oklahoma. Population 3,000. One block from new 31-bed hospital. Contact David Fried, M.D., Box 72, Hollis, Oklahoma.

GENERAL practitioner desires location in Oklahoma, population of town unimportant. Graduate of University of Tennessee School of Medicine in 1948. Contact Horace D. Farthing, M.D., Box 116, Ft. Supply, Oklahoma.

FOR SALE: Ultrasonic machine, good condition, \$150.00. Curry Hospital & Clinic, Inc., Sapulpa, Oklahoma. Phone BA 4-3081.

WANTED young general practitioner to join two other G.P.'s and surgeon in suburb of Dallas, Texas. Attractive working conditions, good town, schools, and churches. Salary at first—with partnership, eventually. No investment required. Contact Geo. W. Apple, Jr., M.D., P.O. Box 158, Plano, Texas.

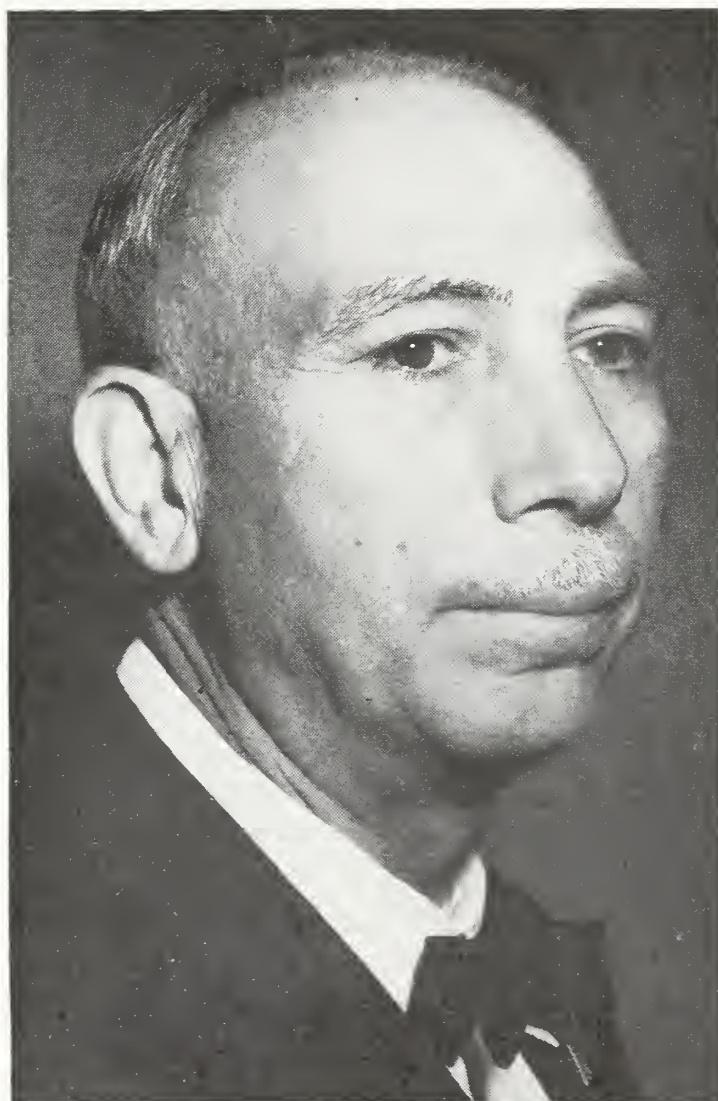
WOULD LIKE to buy examining room equipment and office furniture. Contact Key C, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

EXCELLENT OPPORTUNITY in McAlester, Oklahoma, to take over lucrative practice of deceased physician. Equipment and office furnishings may be sold separately. Contact Presley Brown, L.L.B., 1st and Grand, McAlester. Ph. GA 3-0294.

WATONGA CLINIC, Watonga, Oklahoma (population 3,500) wants to add general practitioner to present four-physician group. Clinic building less than four years old. Guaranteed salary first year, with subsequent option to become partner. Cattle, agricultural economy. Large trade territory. Contact A. K. Cox, M.D.

WANTED internist, board certified or eligible. Group practice opportunity in expanding community. Write Administrator, The Chickasha Clinic, Box 1069, Chickasha, for complete details. Inquiries kept confidential.

BECAUSE of our loss, by death, of Drs. M. L. Henry and R. A. Harkins, we need two doctors to join our group. Excellent opportunity for general practitioner and board certified specialist in medicine, surgery, E.E.N.T., or pediatrics. Call or write E. D. Greenberger, Medical Arts Building, McAlester, Oklahoma.



Peter E. Russo, M.D.
1904-1963

Doctor Peter E. Russo, President-elect of the Oklahoma State Medical Association, died suddenly March 13, 1963.

He was a gifted man who used his talents wisely and generously. Physician, teacher, scholar, colleague and friend, his countless accomplishments will remain as living monument in his honor.

Doctor Russo was the kind of man whom Marcus Aurelius considered exemplary: "He was a benevolent man who had gravity without affection. He looked carefully after the interests of his friends and tolerated those whose opinions were biased. He had the power of accommodating himself to everyone so that talking to him was more agreeable than any flattery but at the same time he was highly venerated by everyone associated with him. He had the faculty both of discovering and ordering in an intelligent and methodical way the principles necessary for good deeds. He could express approbation without noisy display and he possessed great knowledge without ostentation."

He had a wish to enrich the lives of his fellow men and in this desire he succeeded magnificently. His countless friends, students and patients will miss him but they will live better lives themselves because of his own example and his good works.

He was a good man who lived a very worthwhile, a genuinely successful life.

It's Your Meeting, Doctor

THE OSMA's 1963 annual meeting is set for May 3rd, 4th and 5th in Tulsa. Complete details on the outstanding scientific, social, socio-economic and business sessions are contained in this issue of the *Journal*.

Production of the meeting amounts to more than \$10,000 in financial outlay plus hundreds of man-hours contributed by Tulsa county physicians, officers of the OSMA and the Tulsa County and OSMA staffs. The objectives of the meeting are: to offer the membership a once-a-year opportunity for a diversified *educational program*; to offer all members the democratic right to participate in the formulation of *association policy*; and, to provide the cohesive agent necessary to the existence of a successful organization—*good fellowship*!

It's *Your Annual Meeting, Doctor!* Mark your calendar now—plan to be with Oklahoma's medical family at the Mayo Hotel in Tulsa, May 3-5, 1963. □

An Introduction and Invitation

MEET Steve Stahl!

He's Executive Vice-President of the Oklahoma Public Expenditures Council and founder of the Investor's Union of America—and he is one of the best friends the medical profession ever had.

Chances are you have met him before. If you attend meetings of medical societies, civic clubs, or myriad other public and private gatherings—take your choice—you've heard this dynamic person speak out against irresponsible waste in government.

If you watch television, you have seen his excellent program, "The Voice of the Taxpayer."

Wherever he goes and whenever he speaks, *Medicare* receives the full measure of his attention. As a so-called layman, he has no ax to grind, and this adds credence to his effective exposé of the social security health care scheme. His facts are accurate; his sincerity evident to all; and his following in Oklahoma and across the nation grows by leaps and bounds.

Medicare is not his specialty, because he represents no special interest. It becomes his problem because it typifies a general sickness in the present-day philosophy of government; a sickness which permeates every facet of our economy and which has a deleterious social impact upon our national character.

Steve Stahl's principal objective—if it's possible to capsule his varied interests—is to develop an enlightened citizenry and a stronger voice for the people in the affairs of government—federal, state and local. He is dedicated to the promotion of prudence in public spending and efficiency in the performance of *necessary* government functions.

In the pursuit of his goals, Mr. Stahl has probably contributed more toward the defeat of Medicare than have physicians themselves, either individually or collectively.

Despite general praise for Mr. Stahl, physicians have only offered him token financial support, yet he continues to fight for our *special* interest with undiminished vigor, including participation on our annual meeting program in May.

There were only 103 physicians who belonged to the Oklahoma Public Expenditures Council in 1962, and their combined annual contribution was only \$2,313. A good bargain for us, perhaps, but a poor tribute to a man who has befriended us and championed so effectively the political philosophy of most physicians.

The Oklahoma Public Expenditures Council is located at 207 Commerce Exchange Building, Oklahoma City 2, Oklahoma. *Introduce yourself to Steve Stahl—ask him about OPEC and the Investors Union—and give him the financial and personal support he so richly deserves!* □

Underprivileged Kids In Your Home?

IT WAS A saddening shock to learn recently that Oklahoma ranks a low 43rd among the 50 states in provision of library services!

How can we do this to our youngsters?

Make no mistake, a child who has no public library available is as underprivileged as a New York slum child who has never seen the woods and fields, who has never petted a puppy or seen a cow.

Fourteen counties in Oklahoma do not have a single library. Thousands of Oklahomans have no library services available to them.

I grew up in Guthrie, where the old Carnegie Library was as much a part of my youth as home or school: Its quiet coolness in summer, the cluttered basement where Tom Mix once taught gym classes, the hiss of its steam radiators as I sat on winter afternoons between shelves and shelves of books and read Zane Gray, Tarzan of the Apes, the Oz books, Sherlock Holmes, and E. Phillips Oppenheim, how vivid every sense!

Perhaps we over-emphasize the cultural value of libraries. If I acquired culture there, it was strictly by accident. To me, the library was a fun place. The world is so full of marvels, excitement, adventure, love, and kindness, and the library is the *only* place you can *always* be sure of finding them.

Now I am surrounded by the Oklahoma State Library, the City Public Library, the Historical Society Library, two university libraries; it had just never occurred to me that there are people in Oklahoma *now*, children in Oklahoma, to whom no public library is available.

What is the public library situation in your community? If you don't know, you must find out. The Oklahoma State Library has prepared a check sheet, free upon your request, to help you determine whether your library is adequate, or whether it needs *your* help to improve its facilities. Write and request one of these check sheets.

If your library needs improvement, or if your community is one of those that does not even have a public library, National Library Week, April 21-27, is the time to

start doing something about it. Investigate the tremendous success of the new Multi-County Libraries in Oklahoma. Your community, however large or small, can provide adequate public library facilities for you and your children, through a Multi-County System. Write to the Oklahoma State Library, State Capitol, Oklahoma City, for information.—*Bill Burchardt*, Editor, *Oklahoma Today* magazine. □

The County Medical Society And the Hospital

THE UNIQUE situation of many County Medical Societies wherein these organizations disavow any control over hospital staff appointments in a given area and yet, practically speaking, have complete control over such appointments through hospital rules and regulations has led inevitably to appeal to the courts of the land. This interesting complex has probably been analyzed most completely in the case of *Falcone vs. the Middlesex County Medical Society* in New Jersey.¹ In this instance, a doctor had been duly licensed to practice medicine by examination given by the New Jersey State Board of Medical Examiners. He was then admitted to the Middlesex County Medical Society as an *Associate Member* and granted staff privileges at two local hospitals. Both hospitals had the usual stipulations in their requirements for staff privileges that a doctor must be a member of the local County Medical Society. Before attaining full membership in the Society, it was decided that the doctor's educational requirements did not meet the accepted standards for membership and he was turned down by the Society's Medical Ethics Committee. Concomitantly, his staff privileges at the two hospitals were terminated. He appealed to the State Medical Society of New Jersey and to the Judicial Council of the AMA, both of which refused to interfere.

Next, the doctor filed an action in the nature of a suit for mandatory injunction to require the County Medical Society to admit

1. *Falcone vs. Middlesex County Medical Society*, 62 N.J. Super. 184, 162 Atl. 2d 324.

him to membership. The court reached the interesting conclusion that the County Medical Society (combined with component parts of the State Medical Society and the American Medical Association) had "virtual monopolistic control of the practice of medicine." The court discarded the contention that it was the hospital and not the County Society which required County Society Membership as a prerequisite to hospital staff membership and ordered the County Medical Society to admit the plaintiff.

The import of this case is that it discards the usually accepted opinion that membership in a County Medical Society is a privilege and not a right. It is of further interest to note that the Medical Society was sued rather than the hospital.

In the State of Oklahoma it is unlikely that an exactly comparable situation could arise due to the detailed study of an applicant's record of medical education that is made by the State Board of Medical Examiners. The Oklahoma State Board of Medical Examiners takes upon itself to ascertain by certification from the schools that the applicant has attended not only the courses indicated but the actual grades that he attained, and this hard-working Board is careful to exclude any applicant whose course of study has not been thoroughly documented by an approved school of medicine as listed by the American Medical Association. The Board also requires certification of satisfactory performance of duties in any hospital appointment. The screening done by the County Medical Society of the applicant's request for membership is then merely a double-check on what the State Board of Medical Examiners has already done in the utmost detail.

Nonetheless, it behooves County Medical Societies to function without question as organizations concerned with the betterment of the practice of medicine if they are to maintain their position as voluntary organizations. □

(Further developments in the role of the medical society will be discussed in a forthcoming article.)—*Walter E. Brown, M.D.*

Federal Aid for Nurses

A GREATLY EXPANDED program of Federal aid to nursing education, service and research is recommended in a report by the Surgeon General's 24-member Consultant Group on Nursing released by the Public Health Service, U.S. Department of Health, Education, and Welfare.

The Group made 20 separate recommendations including: new programs of Federal aid for stimulation of nurse recruitment, assistance to nursing schools for construction of educational facilities and for improved nursing education programs, loans and scholarships for nursing students, and financial assistance to State, regional, and national agencies for recruitment programs for nurses and other health personnel.

Recommended for expansion and extension are existing Public Health Service programs of assistance for advanced training of nurses in leadership positions, improved utilization and training of nursing personnel, and nursing research and fellowships.

Surgeon General Luther L. Terry, in releasing the report, said, "The Consultant Group's report gives the information about nursing problems which is essential to help fill the gaps in our knowledge of total health manpower needs. It more than confirms our earlier beliefs about the magnitude and seriousness of the problems in nursing which stand in the way of giving good care to the people of this Nation.

In transmitting the Group's report, the Chairman, Doctor Eurich, said, "The solution of the nursing problem is a complex matter; it requires a multipronged attack with adequate resources to do the job. A timid, piecemeal approach is doomed to failure. The recommendations of the Consultant Group call for a broad and integrated attack on the many problems in the nursing field.

"In the judgment of the Consultant Group, if the nursing problem is to be solved, there is no alternative to Federal aid," Doctor Eurich said.

The Group called for an estimated 680,000 professional nurses in practice by 1970 including 120,000 with academic degrees. This is an increase of 130,000 over the present nurse supply. Needs for licensed prac-

tical nurses were estimated at 350,000 by 1970, up more than 50 per cent over the current level of 225,000.

The Group estimated that professional nursing schools should graduate 53,000 nurses a year by 1969, a 75 per cent increase over the number of 1961 graduates, in order to reach its 1970 goal. Estimates of the number of graduates needed by type of basic nursing school are: basic baccalaureate degree programs, 8,000 (4,039 in 1961); diploma programs (in hospitals), 40,000 (25,311 in 1961); and associate degree (junior college) programs 5,000 (917 in 1961).

Also needed, according to the Group, would be 3,000 nurses with master's or higher degrees, a 194 per cent increase over the comparable number of graduates in 1961, and 5,000 post-R.N. baccalaureate graduates, a 100 per cent increase over the 1961 total of 2,456.

The Group's recommendations are designed to bring about the expansion in nursing education programs that would be needed to achieve the 1970 goals. More than six per cent of the Nation's high school girl graduates would have to be recruited to nursing, the Group estimated, or at least 7,000 more girl graduates each year, as compared with the current recruitment rate of 5.3 per cent. More men and more older women are also needed the Group reported.

Low-cost loans to nursing students in all types of programs would be partially cancelable for a specified period of employment in active nursing service. Scholarships are recommended for ten per cent of the students admitted to accredited baccalaureate degree programs in nursing.

Assistance through project grants is recommended for States and other public and nonprofit institutions for training and other programs designed to improve utilization of nursing personnel.

The Group reported that the existing Public Health Service aid programs in nursing have been very effective in partially coping with some of the more acute problems and recommended that these be substantially expanded.

These programs include: Assistance to State and local agencies and hospitals on improved utilization of nursing personnel;

the Professional Nurse Traineeship Program for the preparation of nurse administrators, supervisors, and teachers; the Nursing Research Grants and Fellowships Program; Public Health Traineeship Program for health workers including nurses; and the training program for teaching and training stipends for psychiatric-mental health nursing. □

Mental Health Administration

THERE is an increasing public clamor for better mental health services. Certainly there is now a more positive attitude toward the mentally ill and mental hospitals than ever before; however, negative attitudes are still strong and scape-goating of mental hospitals and staff is still with us. Everyone, regardless of his educational background and experience, considers himself an expert on administration and human nature. It is imperative that public education concerning mental health matters be pursued more vigorously. Without public understanding, we can expect little public support for our program.

What is wrong with Oklahoma's mental health program is not its administrative structure. This is not the problem, for it is fundamentally sound as presently organized. There is, of course, always room for improvement in performance. Since 1953, significant strides have been made in our program, with many improvements during the past biennium. Treatment has been expanded and more efficient methods instituted. While inefficiencies continue to exist, this Department will compare favorably with other mental health departments of other states and with other departments in this State Government.

No new law reorganizing the Department is going to produce any miracles which will make available more funds, increase the number of qualified professional people, repair physical plants or create badly needed community facilities.

Administration of Oklahoma's mental health program should follow established principles of administration and good clinical practice.

(Continued on Page 196)

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In writing my OSMA Presidential finale I shall present some constructive criticisms of our organization which I hope may be used by my able and honored successors to sharpen the spectrum and accentuate the focus of our endeavors:

♦ The perverse machinations of our headquarters precludes the use of full capacity to carry out pertinent requirements.

♦ There are too many councils and committees; their interests and authorities overlap.

♦ An executive committee composed of the President, President-Elect, Past-President, Vice-President, Secretary-Treasurer and the two Delegates to the AMA, all duly elected officials of our House of Delegates, should be vested with greater authority for interim decisions.

♦ In these complex times, the association lacks a sense-of-direction. Our ship changes course with each new administration. The Executive Office provides continuity now, but an officially constituted group of our most able physicians should be charged with the important responsibility of long-range planning.

♦ The individual doctors throughout Oklahoma can do more to improve our public relations by entering actively into their own civic and community activities and rendering good medicine to their neighbors, than all the T.V., radio, press and speaking activities this headquarters may be able to develop.

♦ Increasing scholarships and loans for those already entered in medical school poses questionable values and pursuits; as does more and more medical graduates going into research and specialization. Our perspective needs more clearing.

♦ There are many wasted man-hours on fruitless combats with windmills, and of course, we must indulge in that stimulating, melodious sound of our own voices.

I want you to know that I am extremely proud of my executive committee and my able-working council chairmen, Doctors Rex Kenyon, Wilkie D. Hoover, R. R. Hannas, R. Q. Goodwin and Paul Erwin. Many committees have worked well.

Don Blair, our executive secretary, in his first year of full authority, has done a truly magnificent job. Dwight Whelan, assistant executive secretary, is progressing with alacrity, relieving Don of many detailed burdens.

In closing, I want to thank each of you sincerely for permitting me to serve as your president. It has been an inspiring and enjoyable experience. In some small measure I hope that Oklahoma medicine has been a little better this year. I shall miss these message visitations.

Gratefully yours,

J. Hoyle Carlock, M.D.

Competition for High Talent

FRANCIS W. PRUITT, M.D., F.A.C.P.

Only one-half of our approved internships are filled each year by graduates of U.S. Medical Schools. 848,000 patient beds have no house staff pretenses whatsoever. This is an increase of 48,000 over just two years ago. What are we to do?

AT NO TIME since Abraham Flexner in 1910 made his historic attack on the low standards of medical education have the nation's medical schools been in such a state of ferment, albeit for vastly different reasons. Medical education is faced with a need for bold recasting of ideas and curricula to meet the needs of today. Within the past few decades the stockpiling of scientific knowledge in the medical and paramedical areas and the increased span required to train a physician have combined to confront the medical profession with a crucial situation. Simultaneously new problems have arisen from the modern image of the role the physician must play with regard to maintenance of health and prevention of disease rather than only its cure.^{1, 2}

This accumulation of medical knowledge occurs at such a pace that even four years of medical school cannot encompass all of this vast information; hence the need for continuing professional education at the post

doctorate level. Some sobering information in medical education was presented at a recent symposium in St. Louis.³ If we are to keep our present physician-population ratio of 132 physicians per 100,000 population, it will be necessary by 1975 to graduate 11,000 physicians every year. We currently graduate a little under 7,000 a year. It is estimated that this increased output would require 20 to 35 additional medical schools.

The number of applicants is dropping off each year. (figure 1) This decline reflects the keen competition present day medicine faces. Students get better counseling at the liberal arts level and are channeled into areas where it is expected they will do best.⁴ Many medical schools now admit 60 per cent of all applicants, whereas in 1952 46 per cent of the applicants were accepted. Some schools have only 200 applicants, especially those whose enrollment is restricted to state or geographic level. This reduced number of applications means lowering entrance requirements in many schools. In 1952, 40 per cent of all new students had an "A" average from liberal arts colleges. Currently the scholastic background reveals only 15 per cent with an "A" average.³ It is also interesting that at the freshman level scholastic failures run seven to eight per cent. The drop-out rate is certainly a cause for con-

1st year Class	Applicants	Applicants Accepted
1948-49	24,242	6,973
1957-58	15,791	8,302
1959-60	14,951	8,510
1960-61	14,397	8,560

Figure 1

cern—so much so that the Maurice Falk Medical Fund recently granted New York's Upstate Medical College \$33,350 to conduct a study on why students drop out of medical school. Doctor D. G. Johnson, Assistant Dean at the Center, said 1,000 students quit the nation's medical schools each year, with the rate ranging from 17 per cent in some schools to 50 per cent in others.⁵

Expense of education is another factor. The 1959 graduate estimated that his education cost of \$3,000 per annum and that one-third of the graduates were in debt. This is also reflected in the financial background of the family of the freshman student. Of the 1950 group, 43 per cent were from families with an income of \$10,000 per year or more. The A.M.A. loan fund began operation in February of last year and will be of great assistance to the student, intern, and resident. It will provide as much as one-half the cost of a medical education. It permits a seven year borrowing period and as much as ten years for repayment. As of this date the borrowers are 68 per cent medical students, 22 per cent residents, and 10 per cent interns. More than 3,100 medical students, interns and residents are beginning the 1962-63 academic year with loans secured by the A.M.A. Education and Research Foundation loan guarantee program.⁶

A House Bill currently before Congress will also provide loans to medical students, dental students, and those in schools of osteopathy.⁷ Its provisions will allow the student to borrow up to \$2,000 per year, 90 per cent of the money to be supplied by the Federal government and 10 per cent by the state or school. As now written, it would provide 50 per cent reduction where the graduate locates in a sparse area, goes to work for a non-profit organization or enters the armed forces.⁷

Health is now regarded as the right of everyone—a vital national concern, not only because of the relation of health to productivity and problems of defense but also because of the general opinion that medical care should be available to all people regardless of their ability to pay. There has never been a time when so many people have been looking more carefully and questionably at medical care. What has been happening is the recognition that medical science is in-

separable from the community and society, and that our task is to address ourselves to the application of science to the needs of man and society. This means that medicine and science must face a deeper involvement with society and social problems.⁹

There are all sorts of magazine articles on what is wrong with hospitals and medical care. Surveys have been made to ascertain what the layman wants and why people have changed their opinion regarding the profession. It is stated that people still hold the physician as a person in high regard but that the character of medical practice has deteriorated. Many refer to the popular image of the old family physician who was dedicated and a sympathetic listener before the days of scientific medicine. The layman is more sophisticated medically than his forbears; hence he demands a higher quality of medical care. Such a changing outlook of the layman is bound to have an impact on medical school matriculation. Senator Spradling of Missouri feels that the much-publicized "socialization" of medicine scares many students from pursuing a course in medicine.

What do senior students look for in deciding upon the hospital of their choice for internship? Figure 2 lists the factors in the order of importance. The quality of teaching continues in the number one position. Pay and housing come well down the line in most all surveys. Actually, increased stipends do not attract men away from better teaching internships. Sixty-five per cent of men going into general practice select a non-university hospital for their internships. Seniors shun hospitals whose program is one of labor without an active educational program. This is one of the first things a visit-

Francis Willard Pruitt, M.D., F.A.C.P., graduated from the Indiana University School of Medicine in 1928. Certified by the American Board of Internal Medicine, he is presently Director of Medical Education at Hillcrest Medical Center in Tulsa.

Doctor Pruitt is a Fellow of the American College of Physicians, a member of the International Society of Internal Medicine, the Royal Society of Medicine (London) and the American Heart Association.

Competition / PRUITT

They are interested in teaching their interns.
 You have real responsibility as an intern.
 You get a wide range of experience.
 Has a good staff in the important specialties.
 An intern is respected for what he knows and can do.
 A pleasant atmosphere for interning.
 You get a chance to know the patients thoroughly.
 Modern facilities.
 Top physicians like to affiliate with it.
 Other doctors will know you have had good training.
 They use interns for unimportant tasks.
 Pays interns a little better.
 The place to get ahead.

Figure 2

ing student inquires about from interns currently in a program.

The Matching Plan was established about ten years ago to bring order out of chaos. Although it has its opponents, the general feeling seems to be that it is the best method for distributing a scarce commodity among a host of bidders—the hospitals. The National Intern Matching Plan is, if you will, a clearing house for the appointment of interns.

Over 98 per cent of hospitals approved by the Council participate in this plan. In the 1962 Matching Plan 6,748 students were matched for 12,705 approved internships. It may be of general interest to see how hospitals selected at random around the country fared in the 1962 Matching Plan. (figure 3) The poor showing of some hospitals does not necessarily mean that they do not have a good program. The Internship Review Committee does take a hard look at partially

	Sought	Matched
Denver General	12	1
Bridgeport (Conn.) Hospital	14	0
Washington (D.C.) Hospital Center	20	8
University Hospital (Georgia)	18	0
University Hospital (Maryland)	13	5
St. Barnabas-Swedish	24	0
St. Louis City	46	11
Coney Island	40	0
Harlem	49	0
Cleveland Clinic	16	5
University Hospital (Ohio)	12	6
City of Memphis	18	4
Robert B. Green (San Antonio)	24	2
States:		
Delaware	34	4
Missouri	124	42
North Dakota	14	0
West Virginia	108	9

Figure 3

Year Licensed	Added to U.S.	Foreign Grad	Percentage
1950	6,002	308	5.1
1955	7,737	907	11.7
1960	8,030	1,419	17.7
1961	8,023	1,580	19.4
1950-61	89,139	12,343	13.8

Figure 4

filled programs. The Advisory Committee to study the internship suggested in 1953 a rule by which any hospital failing for two straight years to fill two-thirds of its stated complement automatically loses approval. This rule was modified in 1958 to a "one-fourth rule." It is important to note that the same number of hospitals are losing approval (36 each year) as were withdrawn prior to the one-fourth rule.¹⁰

The interest of the overseas medical graduates in filling the intern posts left vacant in our hospitals reflects the over-all quality of our medical education. The impact of imported medical professional talent is reflected in figure 4. The second column represents the total licensed professional talent as graduated from U.S. medical schools and graduates of foreign medical schools. The third column gives a breakdown of the graduates of foreign schools, while the fourth column represents the increase in percentage.

The increase in foreign-trained physicians has been faster than their U.S.-trained counterparts, resulting in a higher ratio of foreign-trained graduates to the number of newly licensed physicians in each succeeding year. Included in this number are U.S. citizen-graduates of foreign medical schools. The constant increase in these graduates is shown in figure 5.

In 1961 more than 3,600 foreign medical graduates were qualified directly by E.C.F. M.G. examination. The Educational Council for Foreign Medical Graduates, founded in 1957 to certify these graduates, has done much with its qualifying examination to gauge the quality of education obtained by the foreign graduate. The Council has held eight such examinations and reports that foreign-trained physicians entering the

U.S. Citizens Graduates of Foreign Medical Schools (excluding Canada)	
1956-57	212
1958-59	366
1959-60	386

Figure 5

United States have an education equivalent to that of graduates of approved medical schools in this country.

It is important to be certain that they have sufficient basic training to make the most of our methods; we don't have time to teach them fundamentals.¹¹ This author feels that it might be better to send department heads overseas to teach in their schools. Another problem which arises when we train the foreign graduate in our methods is that a man so trained will be frustrated by lack of equipment when he returns to his own country. Also, few cities in this country do very much to make these temporary residents feel welcome.

Educators have raised some other engaging questions if this ratio continues: Is it wise for the United States, at a time of international insecurity, to become progressively dependent for medical care upon the graduates of foreign countries and institutions? Is it proper for this country, with its wealth of medical resources for education, research, and service to import physicians in increasing numbers from countries with a low physician-population ratio and a dearth of educational resources? Is it consistent to provide technical assistance by sending visiting staffs to foreign schools while depriving them of their own competence in order to maintain our domestic physician-population ratio? Conjecture on the part of the Association of American Medical Colleges indicates that this is not intended in any way to suggest limitation of international exchange of medical talent or resources. Quite the contrary, the recent establishment by this Association of a new Division of International Medical Education reflects the growing activity and sense of world responsibility of the Association and its members.¹²

What can and what is being done about this physician shortage? Can present facilities be expanded? Dean Dempsey at Washington University states that the pre-clinical years are at staff capability limit now but feels that with additional teachers, existing plants in the United States can increase their yearly output by 1200. Some schools are undertaking experiments to shorten or otherwise expedite the learning process. Boston University, for example, has enrolled its first group in a six-year plan that will cul-

minate in the granting of both B.A. and M.D. degrees. They plan to increase enrollment of the school from 288 to 500.⁸ Emphasis is placed on social sciences, humanities and cultural studies at the pre-medical level. In order to deal with people as patients, the doctor must understand people as human beings.¹³ At Stanford, the new pattern consists of a five-year curriculum that places major emphasis on basic medical sciences during the first three years. Johns Hopkins has an accelerated program. Other schools are considering changes.

All is not well with some of the existing schools in this country. While it is true that no medical school has lost its accreditation in the last 15 years, it is significant that in the past 10 years, ten schools have been on probation and four still are. Since 1950, fourteen schools have warranted a re-visit. Twenty-four of 86 schools have been short in one way or another, according to Dean Anderson, University of Rochester.¹⁴

The Association of American Medical Colleges questioned a large number of physicians who graduated from medical school in 1950 regarding what the physician rates deficient in his medical education and those areas needing more emphasis. The reply from 2,000 physicians graduating 12 years ago is summarized in figure 6. In our Combined Intern Lecture Series in Tulsa, we have one session on Medical Economics and two on "The Doctor in Court". At a joint meeting of the two committees recently it was felt that there was still need for wider coverage in Medical Ethics.

We are all aware of the impact of emo-

Deficiencies in Curriculum	% of M.D.s
Insufficient instruction in	
doctor-patient relationship	35%
Poor coordination of basic	
sciences to clinical problem	26%
Inadequate clinical experience	18%
Not enough medical sciences	7%
No response	14%
Areas Needing More Emphasis	% of M.D.s*
Medical Economics	63%
Management of minor psychiatric disorders	41%
Legal medicine	31%
Medical ethics	24%
Community health resources	14%
Other	10%
No response	10%

*Totals more than 100% because of multiple responses.

Figure 6

tional problems and the part they play in practice. To evaluate this impact statistically, Barnes Hospital conducted a study last year. One thousand patients, on their first admission to Barnes, were interviewed by a psychiatrist. Eighty per cent were there because of some psychoneurotic complaint. According to the Missouri Division of Health, 12 to 15 per cent of patients seen in 1929 were there because of some neurotic or emotional problem. Future educational plans must include the training of additional health sciences personnel to cope with this problem.

Other changes are going on within the university. New information and clinical progress needs to get to the practicing physician; hence continuing medical education. Short courses and medical television are gaining in popularity. Forty medical schools and 27 dental schools use this teaching medium. The great area of medical television potential in the continuing education of the physician has hardly been touched. In 1959 the Institute for Advancement of Medical Communication, together with the American Academy of General Practice, held a conference on "Television and Post-graduate Medical Education." Following the initial conference, the Council on Medical Television was established. The capabilities of this teaching medium will be far-reaching.

Research creates new pathways, new drugs, and new positions; hence there are significantly more physicians in universities today than in the past. Eight per cent of doctors are in research positions. Seventy per cent of all research money now comes from Federal grants. This is true in both private and state institutions. The total annual expenditure for medical research by Public Health Service was \$3,000,000 in 1946. It was \$442,000,000 in 1961. The President's budget for this fiscal year is nearly 70 per cent greater than the 1961 figure.

There are those who claim that faculty promotion and prestige tend to go to the man in research. However, this is one facet of the phenomenal burst in the whole scientific area of research and development. Research and development have come forward with such enormous thrusts that they must be heavily subsidized, highly organized and

highly competitive. The National Science Foundation states that the amount spent for research and development in the last fiscal year was fifty times that of two decades ago.

The population growth of youngsters under 15 and longevity beyond 65 are among other factors for which we must plan. In 1900 only four per cent of the nation's population was 65 or over. But even more startling is the figure in the 1960 census which shows 16 and a half million persons in this age bracket, or up 34.7 per cent over the same age group one decade earlier.

Obviously the age group between 15-19 and 20-29 make up the smallest percentage of the total population. It is from this remarkably thin group that talent must be recruited for industry and technology, as well as the personnel necessary to man all other services required for the young and the old. This keen competition for talent is portrayed by figures from one of the large state universities graduating approximately 4,000 students. Of 172 graduates from the School of Business in January 1962, 171 companies were on campus for interviews. Two hundred and fifty major companies throughout the country signed up to interview last June's graduates. The Director of Personnel Relations and Placements stated, "The visiting interviewers look for achievement which is expressed not only in grades but in extra-curricular activities and past working experience." He further states that the student with a Bachelor's degree in Engineering and a Master's degree in Business Administration can write his own ticket.¹⁵ The National Aeronautical and Space Administration recently announced that they are subsidizing ten university programs to secure scientists for this activity.

How can medicine compete with such developments? It is urgent that the public be educated intensively with this dilemma. Further, the public should be educated about the relationship of high quality patient care to teaching and its costs. Monetary accounting has been done in certain areas. Perhaps one of the most careful studies was at the Rhode Island Hospital. Their figures show that the 24-hour services of house staff cost the private patient three per cent of his total bill. Averaged out for all categories of patients, this comes to \$1.17 per day.¹⁶ The pa-

tient is generally unaware of the contributions of this highly trained talent, nor is he aware that for this he receives no bill.

The patient, who reaps the harvest of medical education, should bear his share of the cost. The man purchasing a car or television set recognizes differences in quality and pays for the difference. The patient is willing to pay more for a luxury accommodation in a new air-conditioned private room than for a ward bed in an old pavillion. Why can't he pay more for the first-class medical care to be expected in a teaching hospital than the care afforded in a non-teaching institution?

SUMMARY

The present and immediate future medical personnel needs require the attraction of students to assure an output of 11,000 physicians per year by 1975 to maintain our present ratio of 132 physicians per 100,000 population. Medicine and the Health Sciences face extremely keen competition for this talent. Realistic financial support is emerging to give some assistance.

The biological sciences face a deeper involvement with society and social problems.

Fifty per cent of approved internships in this country are left unfilled by United States

and Canadian graduates. Our responsibility to the overseas graduate in our hospitals is of global significance. Methods of streamlining school curricula are under study and some changes have been inaugurated.

The public needs further education in the whole area of health sciences problems. The quality of patient care depends on the continuing education of the physician. □

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Hillcrest Medical Center, Tulsa, Oklahoma

ASSISTANCE NEEDED IN RESEARCH ON SYSTEMIC LUPUS AT UNIVERSITY HOSPITAL

Exciting new results which we have had in studies of systemic lupus erythematosus may explain the cause of the acute exacerbations of the disease, but we are sharply restricted in completing this research because of the availability of very few untreated cases for study. We are most interested in learning of lupus patients who may be willing to submit to several minor tests in order to help learn more about the disease. Patients not receiving adrenal type steroids, whether mild or severely ill, and patients with acute disease in spite of steroid therapy, are suitable for study. A telephone call will enable us to make a quick trip to the patient or arrange for the patient to come here.

Contact George J. Friou, M.D., Department of Medicine, University of Oklahoma School of Medicine, 800 NE 13th Street, Oklahoma City or phone CEntral 6-1366, extension 334.

Detection of Heart Disease in Infants and Children

GERALD L. HONICK, M.D.

The high mortality rate of infants with congenital heart disease can be reduced only by prompt, accurate diagnosis and treatment.

PHYSICIANS treating infants and children often face the perplexing problem of deciding whether the patient has heart disease. The cyanosis, dyspnea or feeding problem of the newborn may or may not be due to heart disease.

In the older pediatric age group it is particularly difficult to decide whether a murmur has its origin in an organic lesion.

McMahon¹ has reported that 20 per cent of babies born with congenital heart disease die within the first week of life, 30-40 per cent during the first month and 60 per cent within one year. Such high mortality during the first few weeks of life necessitates an immediate approach to the diagnosis and treatment of cardiac lesions in hope of reducing the high mortality rate. Cardiac catheterization has become a most important diagnostic necessity for clinical appraisal of heart disease in pediatric patients, regardless of age or weight. These studies are now relatively innocuous.

Cardiac evaluation of an infant should provide information relative to the following abnormalities:

- (1) Congestive failure.
- (2) Abnormal pulses.
- (3) Cyanosis.
- (4) Cardiac enlargement.
- (5) Significant murmur.

It has been estimated by Keith² that 20

per cent of those patients with congenital anomalies who develop congestive failure during the first week of life, have an 85 per cent mortality. The mortality rate decreases to 50 per cent when the onset of cardiac failure is delayed two-six months and to 40 per cent when the onset of failure occurs between the first and tenth year of life. Congestive failure is not so easily recognized in infants as in older individuals; usually in infants the combination or both right and left-sided failure occurs. Infants in congestive failure frequently present a history of poor weight gain or irritability, associated with feeding problems. Signs of congestive failure include tachycardia, tachypnea with a rate of 40 and excessive perspiration. Rales are heard only in the more severe cases of failure, generally indicating superimposed respiratory infection. Hepatic enlargement, usually greater than two-three cm below the costal margin and characterized by a round-

Transposition of the great vessels	71
Coarctation of the aorta	44
Ventricular septal defect	27
Aortic atresia	26
Endocardial fibroelastosis	22
Atrioventricularis communis	21
Anomalous pulmonary venous drainage	19
Single ventricle	15
Patent ductus arteriosus	10
Isolated myocarditis	10
Persistent truncus arteriosus	6
Aberrant left coronary	6
Coronary calcinosis	6
Pulmonary stenosis	5
Tricuspid atresia	5
Aortic stenosis	4
Tetralogy of Fallot	4
Ebstein's disease	2
Pulmonary atresia with intact septum	1
Total	304

Table I
Various causes of Heart Failure in Order of Frequency*

*Keith, J. D.: Congestive heart failure.

Birth-1 Week (20% of Total Group)		Other	
Aortic atresia	44%	Patent ductus arteriosus	
Transposition of great vessels	10%	Ventricular septal defect	
Coarctation of aorta	10%	Atrioventricularis communis	
Patent ductus arteriosus	10%	Paroxysmal tachycardia	28%
Pulmonary stenosis of atresia with normal aortic root	8%	Pulmonary vein into left superior vena cava	
Ebstein's disease	8%	Tricuspid atresia	
Other	10%	Single ventricle	
1-2 Months (18% of Total Group)		2-3 Months (10% of Total Group)	
Transposition of great vessels	25%	Endocardial fibroelastosis	40%
Endocardial fibroelastosis	16%	Transposition of great vessels	15%
Coarctation of aorta	12%	Total anomalous pulmonary venous drain- age into left superior vena cava	15%
Atrioventricularis communis	12%	Ventricular septal defect	15%
Paroxysmal tachycardia	12%	Other (including)	
Other	23%	Coarctation of aorta	
3-6 Months (14% of Total Group)		Truncus arteriosus	15%
Endocardial fibroelastosis	25%	6-12 Months (10% of Total Group)	
Transposition of great vessels	20%	Endocardial fibroelastosis	57%
Ventricular septal defect	15%	Ventricular septal defect	14%
Total anomalous pulmonary venous drain- age into left superior vena cava	10%	Other (including)	
Coarctation of aorta	10%	Atrioventricularis communis	
Atrioventricularis communis	10%	Pulmonary venous anomaly	29%
Other		Patent ductus arteriosus	
Left coronary off pulmonary artery		Hypertension	
Tetralogy with left-to-right-shunt	10%	1-10 Years (10% of Total Group)	
1 Week-1 Month (18% of Total Group)		Rheumatic heart disease	
Coarctation of aorta	36%	Paroxysmal tachycardia	
Transposition of great vessels	20%	Isolated myocarditis	
Endocardial fibroelastosis	16%	Anemia	14 cases
		Endocardial fibroelastosis	
		Coarctation of aorta	
		Atrial septal defect	
		Ventricular septal defect	

Table II

Type of Heart Defect in Relation to Age at Onset of Heart Failure*

*Keith, J. D.: Congestive heart failure.

ed margin, is the most common sign of cardiac decompensation in the infant. Periorbital edema is frequently present but ascites occur late. A protodiastolic gallop is almost always heard in congestive failure. Occasionally pulsus alternans is detected during blood pressure determinations (as the pressure cuff is slowly released, every second beat is heard and on further lowering of the pressure every beat is heard). Chest x-rays generally show cardiac enlargement (with a cardiothoracic ratio greater than 60 per cent) and passive congestion of the lungs. The cyanosis which may be present in congestive failure is due to one of three causes: (1) Right to left shunt, (2) pulmonary congestion with inadequate oxygenation of lungs and (3) vasomotor effect

in the small vessels and capillaries leading to slowing of the circulation with desaturation of hemoglobin. The electrocardiogram may be confusing in evaluation of the infant due to the normal imposition of the right ventricular preponderance. This, however, gradually subsides over the first few years of life. Thus one should be well versed in evaluating infant electrocardiograms.

The most frequent causes of congestive failure in the infant are listed in table I.³

Gerald L. Honick, M.D., graduated from the University of Oklahoma School of Medicine in 1949, where he is now Instructor in Medicine. His private practice is limited to his specialty, cardiology.

The diagnostic importance of the precise age at which onset of cardiac failure occurs in the infant, is shown in table 2.

Coarctation of the aorta accounts for one-fifth of the cases of congestive failure occurring during the first weeks of life and accounts for five-ten per cent of cardiac deaths during the first year. One should always carefully evaluate the femoral pulsations for detection of coarctation of the aorta. If femoral pulses are present, they should be synchronous with the right radial artery pulsations and will lag slightly in the presence of coarctation. For proper cardiac diagnosis, blood pressure determinations should always be obtained from the right arm and the leg. This can be done in an infant by the "flush" technique by inflating the cuff while the hand or foot is manually compressed, resulting in paleness of the extremity distal to the cuff. On lowering the pressure, marked flushing will occur when the mean arterial pressure is reached. In the presence of coarctation the mean flush pressure is 20 mms higher in the arm than in the lower extremity. Usually infants with coarctation can be managed medically by treatment of congestive failure and rarely is surgery necessary for this condition during infancy. Ideally surgery should be postponed until school age when a more adequate, permanent surgical correction can be done.

Cyanosis may be of cardiac, pulmonary, cerebral or vasomotor origin. Generally, cyanosis of cardiac origin can be separated into two groups. Group I is characterized by marked respiratory distress, evidence of congestive failure but initially little cyanosis and an absence of cardiac murmurs. X-ray of the chest reveals cardiac enlargement with increased lung vascularity. Group II cyanosis is more pronounced and the color deepens with crying, yet is accompanied by little dyspnea. Rapidly deepening cyanotic episodes may occur in which the patient becomes extremely irritable and restless, followed by short periods of stupor or unconsciousness. These hypercyanotic spells may be life-threatening and present the immediate necessity for definite diagnosis. Frequently these patients are in immediate need

of a surgical procedure to increase blood flow to the lungs.

It is erroneous to think that heart disease cannot occur in the absence of murmurs. Richards reports that only eight per cent of murmurs heard at birth are due to congenital heart disease and that only 14 per cent of patients with congenital heart disease had murmurs at birth.⁴ It is thus evident that the presence or absence of a murmur is not conclusive evidence for or against the presence of congenital heart disease. Severe heart disease may be present with no murmur, yet insignificant lesions with minimal heart disease may be accompanied by very loud murmurs, as exemplified by the small ventricular septal defect (*maladie de Roger*). Severe aortic stenosis may appear very benign until the healthy appearing child suddenly dies after exertion, due to his severe aortic stenosis. Patients with aortic stenosis should be warned to heed the onset of any precordial pain or syncope on effort. Such prodromata are often associated with significant left ventricular hypertrophy and T-wave changes over the left precordium. In aortic stenosis, the chest x-rays generally appear normal, except for slight rounding of the cardiac apex. All children with left ventricular hypertrophy and aortic stenosis who have a history of chest pain or syncope, should have cardiac catheterization in order to evaluate the degree of valvular stenosis.

SUMMARY

Accurate diagnosis and prompt treatment can save many babies with congenital heart disease. The key to diagnosis of such disorders frequently is cardiac catheterization, which at its present state of development, carries an acceptable small risk even in the smallest infant. Infants and children who show congestive failure, abnormal pulses, cyanosis, cardiac enlargement, or significant murmurs are in immediate need of thorough cardiac evaluation. □

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- 5700 N.W. Grand Blvd., Oklahoma City, Oklahoma

Medullary Fixation of the Fractured Clavicle

RICHARD F. SHRINER, JR., M.D.

FRACTURES of the clavicle frequently cannot be completely reduced or after reduction, perfect anatomical alignment cannot be maintained. The usual methods of maintaining reduction are often not only inadequate but are very uncomfortable and prolong convalescence. Non-union in the clavicle is very rare and conservative treatment is the most accepted method of care. However, in the individual who wants early use of the arm, medullary fixation of the clavicle is a very simple and rapid procedure using a special pin.

The pin has trocar points on both ends and is eight inches long. On one end for one-half inch there are raised threads sixteen to the inch. The pin is $\frac{3}{32}$ inch in diameter with the raised threads one-eighth inch in diameter (figure 1).

The technic is a modification of that described by D. McKeever. The advantage is that the pin is threaded so that it brings the fracture together and does not distract

it. The principle is essentially the same in that a threaded portion of the pin is necessary to prevent it from wandering.

Technic: A linear incision is made over the fracture site. Dissection is carried down to the clavicle but the periosteum is not stripped. The lateral fragment is grasped with bone-holding forceps or Ochsner forceps, the pin is then passed into the medullary canal and with the drill chuck on the threaded end the pin is drilled through the clavicle to emerge near the coracoid tuberosity. A stab wound is made over the emerging pin and continued until the drill chuck can be changed to be connected to the pin extruding posteriorly. The pin is brought out until the threaded portion is into the lateral fragment inside the fracture line. This is performed by reversing the drill. The fracture is then reduced and the pin is drilled into the proximal fragment far enough to engage the cortex of the clavicle. This can be verified usually by palpation over the clavicle as the pin emerges through the cortex. If the pin emerges too far it can be backed out to a point where the pin cannot be felt. The excess portion of the pin, in the posterior region of the shoulder, is cut off just below the skin.

After-treatment: The patient may be ambulatory immediately and usually a sling for one to two weeks is all that is necessary for support. Callus and union should be adequate within eight to twelve weeks. The pin then can be removed with local anesthesia. This is best performed with the patient sitting up remembering that the drill must be reversed to extract the pin. □

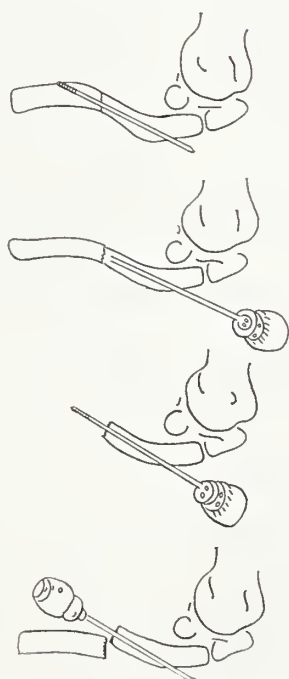


Figure 1. Illustrated Technique.

Richard F. Shriner, Jr., M.D., graduated from the University of Oklahoma School of Medicine in 1944. His private practice in Hobart, Oklahoma, is limited to his specialty, orthopedics.

Blunt Trauma to the Abdomen*

J. RAYMOND HINSHAW, M.D.
Doctor of Philosophy, Oxford

When the abdomen has been injured by nonpenetrating trauma, correct diagnosis is often difficult. By using the diagnostic aids and by avoiding the pitfalls listed here one can arrive at the best course of action.

A FEW YEARS AGO my colleagues and I described our experiences with blunt, or nonpenetrating, wounds of the abdomen.^{1,2} Later, in going over our own data and much of the pertinent literature I discovered many aids to be used and many pitfalls to be avoided in both the diagnosis and treatment of such injuries. I wrote down these "clues" and "traps" in outline form so that I could refer to them readily and remember them more easily. They have been of help to me and I think they can be of help to others. I offer them not as a substitute for other papers on blunt trauma to the abdomen but as a supplement to them. They should be most useful to the reader who is familiar with one or another of the more conventional papers.

DIAGNOSIS

Many patients who suffer blunt trauma to the abdomen can be easily diagnosed as suffering from one of the common injuries such as a ruptured spleen or a ruptured kidney. But many others with these same injuries,

or less common ones, are not so easily diagnosed. Correct diagnosis leads to correct treatment, and the correct treatment applied at the right time may save a life. In this section, clues to correct diagnosis will be given opposite the traps which can lead to an incorrect diagnosis.

ETIOLOGY

Clue	Trap
1. If a blow is anticipated, the abdomen is protected by tensed abdominal muscles; unexpected blows are more likely to cause serious intra-abdominal injury.	1. The magnitude of the accident does not necessarily determine the magnitude of the injury or, put another way, minor accidents can cause major injuries.
2. Blows to the lower costal margins are almost as likely to cause intra-abdominal injury as are those to a flaccid abdomen.	(One of our patients ruptured her spleen from falling off an ordinary sofa; another suffered a complete transection of the jejunum while bowling. Such oddities, while unusual, are not rare.)

HISTORY

1. Shoulder pain without evidence of injury to the shoulder, or shoulder pain without shoulder tenderness, suggests blood or intestinal juice under the diaphragm.	1. The patient may be nearly asymptomatic for several hours following the accident and then develop symptoms after an appreciable quantity of blood or fluid has accumulated in the abdomen.
2. Testicular pain and priapism point to a retroperitoneal injury.	2. Retroperitoneal rupture of the duodenum often exhibits an asymptomatic period before the onset of pain.
3. The continuous desire to void with inability to do so is almost pathognomonic of bladder or urethral damage.	
4. A history of hematemesis, bloody stool or hematuria points to a site of injury.	
5. If there are no injuries to the thorax, dyspnea suggests splenic or hepatic rupture.	

*From the Department of Surgery, University of Rochester School of Medicine and Dentistry. Presented at the Oklahoma City Clinical Society, October 29-31, 1962.

PHYSICAL FINDINGS

- | | |
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| <ol style="list-style-type: none">1. Signs of shock and of peritoneal irritation are the common findings with intra-peritoneal injury.2. Early, profound shock points to rupture of the liver.3. Rapid abdominal distention and tachycardia in the face of transfusion point to severe, continued bleeding. | <ol style="list-style-type: none">1. Profound shock can mask all peritoneal signs; diagnostic signs may appear only after transfusion has restored the blood pressure.2. Peristalsis may continue to be active even after rupture of the intestine.3. The abdominal examination may be entirely negative with a severe retroperitoneal lesion. |
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COMMON LABORATORY EXAMINATIONS

- | Clue | Trap |
|---|--|
| <ol style="list-style-type: none">1. Although a low hematocrit is not necessarily diagnostic, a falling hematocrit determined by repeating the examination indicates hemorrhage.2. A white blood cell count of more than 20,000 suggests rupture of the spleen or liver.3. A rising white blood cell count on successive examinations suggests intra-abdominal injury.4. Gross or microscopic hematuria results from kidney damage more often than from damage to the urinary bladder.5. Elevation of the serum amylase indicates a damaged pancreas. | <ol style="list-style-type: none">1. The white blood cell count is frequently normal with ruptures of the intestine and, rarely, can be normal with a ruptured spleen.2. In the presence of an abdominal wall injury or minor kidney damage, leucocytosis sometimes occurs with, apparently, no intra-abdominal injury.3. The amount of hematuria does not necessarily reflect the severity of injury to the kidney. |

ABDOMINAL PARACENTESIS

The introduction of a Number 18 or Number 20 needle into the abdominal cavity of a patient thought to have sustained intra-abdominal injury has never, so far as I am aware, led to a complication. If the patient can be positioned for ten minutes or more to promote the collection of any peritoneal fluid in one area, the chances of obtaining a positive tap are increased. Those who are most enthusiastic about the procedure tap all four quadrants if necessary. A better way to obtain as much information is to introduce a small, flexible polyethylene catheter through a Number 14 needle which, with stylet, has been inserted just into the peritoneal cavity. If aspiration yields nothing after the catheter has been advanced 12 to 18 centimeters, 20 ml. of sterile normal saline should be in-

jected and withdrawn. The needle must be withdrawn before removing the catheter to prevent the plastic tube from shearing off within the peritoneal cavity.

It is most unlikely that one will introduce the needle either into the intestine or into a blood vessel. Fluid from the intestine can be identified by microscopic examination: it contains many bacteria but few leucocytes. Blood withdrawn from a blood vessel should clot. With this in mind, these are the aids to diagnosis and the pitfalls to be avoided.

Clue

1. If blood is obtained by the tap and it does not clot, with the exception of Trap No. 3 opposite, intra-abdominal hemorrhage is certain.
2. Bile stained fluid indicates injury to the gall bladder or extrahepatic biliary system. As will be seen later, it is useful to obtain this information prior to operation.

Trap

1. While a positive tap is diagnostic, a negative tap means nothing.
2. In cases of rupture of the intestine, more often than not the abdominal paracentesis is falsely negative.
3. Rarely, the needle may be introduced into a large retroperitoneal hematoma and thus yield a "false positive" tap. An experienced person can easily avoid this.

X-RAY EXAMINATIONS

(Ordinary Films of the Abdomen)

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| <ol style="list-style-type: none">1. Haziness of the plain abdominal film suggests free fluid.2. Obliteration of renal outlines or psoas shadows is seen with retroperitoneal edema or hemorrhage.3. Rib fractures suggest associated spleen or liver injuries.4. Fractures of lumbar transverse processes are associated with rupture of the kidney.5. Pelvic fractures suggest particular attention to the question of a ruptured bladder.6. Enlargement of the splenic outline and, less commonly, serration of the greater curvature of the stomach, indicate splenic rupture.7. Free air indicates a perforation of the gastrointestinal tract.8. Retroperitoneal gas should mean a rupture of the duodenum. | <ol style="list-style-type: none">1. Free air is demonstrable in well under half the cases of intestinal rupture.2. In the experience of most people, the majority of cases of ruptured spleen cannot be diagnosed by x-ray examination. |
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THE INTRAVENOUS PYELOGRAM

Clue	Trap
1. Almost always demonstrates any serious injury to the kidney.	1. At times does not reflect the magnitude of injury.
2. In the event of severe renal damage, indicates the presence or absence of a functioning, contralateral kidney. (This may determine what should be done.)	
3. Demonstrates renal anomalies which may modify one's treatment.	

THE GRAVITY CYSTOGRAM

- | | |
|---|----------|
| 1. Is diagnostic of a ruptured urinary bladder. | 1. None. |
|---|----------|

MISCELLANEOUS PROCEDURES

On very rare occasions two other procedures can be of diagnostic value.

1. If a rupture of the stomach or duodenum is suspected but the diagnostic signs are too equivocal to indicate a laparotomy, fluoroscopy and abdominal films after the patient has swallowed a radio-opaque medium may show the lesion or indicate an intact gastro-intestinal tract. (Barium should be avoided.)

2. If a ruptured diaphragm is suspected but cannot be proved, chest and abdominal films after diagnostic pneumoperitoneum will demonstrate the defect.

The next procedure to be mentioned should, in the opinion of many, be avoided altogether. It is the introduction through a catheter of a measured volume of sterile saline into the urinary bladder. It has been said that an equal volume return on aspiration indicates

an intact bladder. It is now known that an equal or even greater volume can be aspirated with a ruptured bladder. Attempts to obtain unequivocal results may lead to further extravasation.

TREATMENT

The details of treatment of the individual injuries produced by blunt trauma to the abdomen are described in many papers. Instead of repeating what is already available elsewhere I think it would be of more value to the reader to have an outline of certain therapeutic points which, if one is familiar with them, lead to correct treatment.

PRE-OPERATIVE TREATMENT

1. If one strongly suspects but cannot prove intra-abdominal injury, it is still wise to institute nasogastric suction and intravenous fluid therapy and to type and cross-match blood. It may be too late if one waits for a rising pulse and a falling blood pressure before instituting treatment.

2. If the patient is in profound shock when first seen, if tachycardia persists in the face of transfusion, or if the abdomen distends rapidly after the accident, one can be certain of severe bleeding. It is then wise to have needles for intravenous therapy in more than one vein, to have more than the usual amount of blood available for transfusion and to have two suction units available before the laparotomy is started. (These signs should also prepare the surgeon to face a tremendous flow of blood as soon as the peritoneum is opened.)

OPERATIVE TREATMENT

1. If the surgeon discovers intraperitoneal hemorrhage, the common causes are a ruptured spleen or ruptured liver. If neither the liver nor the spleen is injured, he should search for a ruptured mesenteric vessel which is the next most likely cause of the bleeding.

2. The surgeon who encounters massive intraperitoneal hemorrhage should be prepared to control bleeding by rapid finger compression of the aorta, the splenic pedicle, the porta hepatis, or the mesenteric vessels.

A graduate of the University of Oklahoma School of Medicine in 1946, J. Raymond Hinshaw, M.D., has been certified by the American Board of Surgery. He is Assistant Professor of Surgery at the University of Rochester School of Medicine.

Doctor Hinshaw is a member of the Central Surgical Association, the Society of University Surgeons, the American Society for Experimental Pathology and the American College of Surgeons.

3. Although adequate transfusion is essential, the rapid replacement of only as much blood as has been lost can, at times, cause pulmonary edema. This is most likely to occur in children. Following hemorrhage they rapidly adjust their circulatory system to a decreased blood volume. If they are subjected to a large transfusion after this adjustment has taken place, the strain may prove to be more than they can compensate.

4. The right lobe of the liver is ruptured five times as often as the left and the convex surface is the site of injury two times out of three.

5. If the convex surface of the liver is injured, a thoraco-abdominal incision may be necessary in the adult but is usually not necessary in the young child.

6. Hepatic tissue which has obviously lost its blood supply must be removed.

7. It is nearly always possible and is always desirable to control hemorrhage from the liver with sutures. Oxidized cellulose may be of use. Relying on ordinary packing as the definitive treatment usually can and should be avoided because it so often leads to later infection or hemorrhage.

8. If the liver has been injured, the peritoneal cavity should be drained adequately to prevent bile peritonitis.

9. The treatment for ruptured spleen, whether it occurs immediately after the accident or is a delayed rupture some days later, is removal of the spleen.

10. If the spleen is shattered, the small nodules of splenic tissue should be removed. Every effort should be made to prevent the further fragmentation of a less severely damaged organ.

11. In the adult, most injuries to the kidney do not require operative treatment. Some require immediate treatment because of massive hemorrhage; others require delayed operation because of repeated hemorrhages.

12. Almost half of the injuries to the kidney in children are due to previously abnormal or diseased kidneys. The majority of the injuries to these abnormal kidneys require operative intervention to prevent death from hemorrhage.

13. If a preoperative needle paracentesis has recovered bile-stained fluid, the surgeon should be prepared to do an operative cho-

langiogram either through the gall bladder or the common duct. This may be his only easy way to identify the site of injury. Most injuries to the common duct are best treated by T-tube drainage and drainage of the peritoneal cavity. Attempts to suture small holes in the duct can cause harm.

14. The preferred treatment for a ruptured bladder is suprapubic cystostomy, extraperitoneal if possible. It is not absolutely necessary to close the rupture if this proves to be difficult, but one should make certain that no spicules of bone from a fractured pelvis protrude through it and prevent healing.

15. When the pancreas has been injured, drainage of the lesser sac may prevent the development of a pseudocyst. If the rupture is through the tail, the tail should be removed; if part way through the body, the edges should be oversewn; if there is a large laceration to the right of the superior mesenteric vessels, implantation of the distal segment into a Roux-en-Y loop of jejunum may be the best treatment.

16. Some injuries to the intestine can be sutured; others must be resected. In making the decision one should remember that there is always more tissue damage than is obvious soon after the accident.

17. The common injuries to mesenteric vessels compromise the blood supply to only a small segment of bowel. Whenever there is any doubt at all about the viability of bowel supplied by an injured vessel, that segment should be excised. Sometimes an injury to a smaller mesenteric artery leaves a small segment of bowel with what appears to be a barely adequate blood supply. This segment of bowel should be resected because perforations through it can occur several days, or even a week, after the accident.

18. Injuries to several organs are not as common as injuries to single organs. Nevertheless, after the major defect has been corrected the abdomen must be explored because multiple injuries are not rare.

SUMMARY AND CONCLUSIONS

It is generally agreed that penetrating wounds of the abdomen necessitate an exploratory laparotomy unless one can prove positively that penetration of the peritoneal

cavity has not occurred. When a patient suffers blunt trauma to the abdomen, however, the decision is more difficult. On the one hand, if the injury consists of minor kidney damage, a retroperitoneal hematoma or a contusion of the abdominal wall, conservative management is the best treatment. On the other hand, these injuries can simulate nearly exactly much more serious ones which require immediate operative intervention. A number of aids to diagnosis and a number of pitfalls which can lead to a wrong diagnosis have been listed. Their systematic use can result in the correct diagnosis of many cases. However, in the very difficult situation, no diagnostic aid is as valuable as repeating the physical examination and repeating the history after an interval of time to determine whether the patient's condition

is better, worse or the same. On rare occasions one is still left uncertain about the extent of damage which the patient has suffered. If he is not in grave danger from multiple injuries, particularly head injuries, the safest course then is an exploratory laparotomy for diagnosis.

Several points on treatment are outlined. If the reader examines these points closely he will discover that most of them explain how some complication can be anticipated and avoided. Attention to these details may save a life. Attention to them will certainly save the surgeon and his patient much valuable time. □

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Fixed Splitting of the "Pulmonary Second Sound"

THOMAS N. LYNN, M.D.*

THE DIAGNOSIS of an *ostium secundum* type of atrial septal defect may be suspected strongly by auscultatory verification of fixed splitting of the second heart sound as heard along the upper left sternal border.

This phenomenon is most easily understood by first considering the normal circulatory physiology. In normal children, young adults and some older adults, the second heart sound, as heard along the upper left sternal border, is an impure sound and is a result of the closure of both the aortic and pulmonary valves. In normals, the aortic valve closes somewhat sooner than does the pulmonary valve resulting in an audible splitting of the pulmonary second sound. This splitting, however, normally varies with the respiratory cycle becoming greater with inspiration and decreasing with expiration. This is due to the relatively greater negative intrathoracic pressure during inspiration resulting in greater filling from the inferior and superior vena cavae of the right atrium and thus right ventricle. When the right ventricle contains a greater diastolic volume as a result of this greater filling, the ejection of blood from the right ventricle takes slightly longer thus delaying closure of the pulmonary second sound and increasing the splitting of this sound.

In the presence of an atrial septal defect, the right atrium is filled not only by the inferior and superior vena cavae and the

coronary sinus but also through the atrial defect from the left atrium. Hemodynamically, the result of this transeptal flow into the right atrium is continued excessive diastolic filling of the right ventricle so that increased or decreased filling from the cavae becomes negligible when compared with the total flow and thus exerts no demonstrable effect on the right ventricular ejection time. This constancy of ejection time results in the auscultatory phenomenon of fixed splitting of the pulmonary second sound. This fixed splitting of the pulmonary second sound, while strongly suggestive of atrial septal defect, is not pathognomonic. It may also be seen in disease states which result in significant pulmonary hypertension such as chronic lung disease and some other types of congenital heart disease. It may also be found in patients with partial anomalous pulmonary venous return to the right atrium, an anomaly in which the hemodynamics are similar to that found in atrial septal defect.

The finding of fixed splitting of the pulmonary second sound combined with the physical findings of a moderate intensity systolic ejection murmur along the left sternal border, an increased intensity of the second component of the pulmonary second sound, and the palpatory findings of a parasternal heave or lift and a palpable pulmonary artery pulsation make one highly suspicious of the diagnosis of atrial septal defect. □

EDITOR'S NOTE: A sound film "Cine Coronary Arteriography" is available at no charge from the Oklahoma State Heart Association, 825 N.E. 13th Street, Oklahoma City, Oklahoma. This film is excellent both technically and in content. Its length is 22 minutes. It would be appropriate for hospital staff meetings or county medical society meetings.

*Assistant Professor, P.M. and P.H.; Instructor, Department of Medicine; University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

Dean's Message

A successful association of medical schools and state mental hospitals, though not unique, is infrequent enough in this country to warrant comment. Universities generally are reluctant to become involved with state hospitals and their overwhelming problems — problems which are most often the result of many years of public apathy and inadequate budgets. Very occasionally medical schools and state hospitals have found ways of working together for their mutual benefit. Such has been the case with the University of Oklahoma Medical Center and Central State Griffin Memorial Hospital in Norman.

In 1954, at the request of the State Department of Mental Health, the University of Oklahoma School of Medicine through the Departments of Medicine and Surgery assumed responsibility for the medical and surgical care of the patients at Central State Hospital. In return, the medical school was given the opportunity to develop a new area for training and research. Later the Radiology, Anesthesiology and Pathology departments also undertook programs of closer collaboration with the state hospital.

The new arrangement was promptly followed by a steadily declining death rate at the hospital. Then occurred a steady increase in the patient-doctor contacts on an "out-patient" basis with a declining admissions rate to the medical wards. The surgical morbidity and mortality rate is presently comparable to that of any first class general hospital in the area. The ability to handle

nearly all types of cases except neurosurgery has made the G.M. & S. service at Central State Hospital the center for medical and surgical care for all hospitals in the state mental health system.

The Central State medical and surgical services provide a unique training facility for the University resident staff, with two medical residents rotating through every two months and two surgery residents every three months, under the supervision of University personnel.

Under the sponsorship of the University it has been possible to develop also a program of research at Central State involving a broad range of subjects. A multi-disciplinary research unit (involving medicine, psychiatry, psychology, biostatistics and biochemistry) works with state hospital personnel and patients. Extensive studies in psychopharmacology and in schizophrenia balance a program in hypertension, diabetes, pyelonephritis and various other conditions of interest to State Hospital and Medical Center personnel.

All in all, the state hospital patient population offers the Medical Center added opportunities for teaching and research. In return, medical and surgical services that are strongly oriented to these opportunities provide the state hospital a high quality of medical and surgical care. This kind of collaboration benefits everyone: the state hospital, the Medical Center, and most of all, the patient.

Mark R. Everett

Hysterical Abdominal Proptosis in Man*

WALTER L. HONSKA, JR., M.D.
BOYD K. LESTER, M.D.
JAMES F. HAMMARSTEN, M.D.

SINCE 300 B. C. when Hippocrates⁴ described twelve women "who imagine they are pregnant," pseudocyesis has become a well-known syndrome. Cases of abdominal distention, resembling pseudocyesis in women, have been noted to occur in men also. In 1949, Alvarez¹ reported 92 cases in which seven of the patients were men. He called the syndrome an "hysterical type of non-gaseous abdominal bloating." He found most of this group to be "nervous, unhappy, neurotic, or psychopathic." In 1951, Roussak⁶ described five cases (four males) and suggested the name "hysterical abdominal proptosis." Kaplan,⁵ Houltain,³ and Ewing² also have reported cases in males. To date, 14 cases of this syndrome have been reported in males.

The following patient presents some of the typical features of this syndrome.

CASE PRESENTATION

A 50-year-old male hospital orderly was admitted to the Veterans Administration Hospital in Oklahoma City with abdominal

swelling. The patient had been in good health until 1943 when he developed abdominal pain and vomiting while on military duty in Louisiana. Shortly thereafter his wife became pregnant and his own abdomen became distended. He recalled feeling embarrassed and shameful; he was teased by his fellow soldiers as "looking pregnant." He was discharged from the Army as incapable of adjusting to the situation. Since 1943 the patient has had frequent episodes of abdominal distention which increased during the working day and which were relieved with sleep at night. He thought that he was never symptomatic away from his job as an orderly and stated, "It is my job that does it and it goes back to that Louisiana campaign." He noted that he frequently was unable to button his trousers when he returned home from work even though he had experienced no



Figure 1. Patient with marked abdominal distention, tense abdominal musculature and lumbar lordosis.

*From the Departments of Medicine and Psychiatry, Veterans Administration Hospital, and the University of Oklahoma School of Medicine, Oklahoma City, Oklahoma.

difficulty in doing so in the morning. On occasion, the swelling developed with such rapidity that he "popped the buttons off" his trousers. The patient had been hospitalized on four previous occasions for abdominal swelling.

Physical examination showed the patient to be an obese white male with lumbar lordosis, marked abdominal distention and tense abdominal musculature (figure 1). The abdomen was usually not tympanic to percussion. There was a well-healed abdominal scar from a knife wound. Diagnostic studies, including complete blood count, urinalysis, liver function studies and gastric analysis, were negative. Radiograms of the lumbar spine revealed a normal lordotic curve and films of the gastrointestinal tract showed normal distribution of gas with no abnormalities (figure 2). A gastrointestinal series and barium enema were normal. The circumference of the abdomen was measured on several occasions during hospitalization (table 1) and found to range from 102 cm. to 108 cm. The patient was not free of abdominal distention at any time during hospitalization.

Psychiatric examination revealed the patient to be an extremely compliant but pas-

4-21-58	3:45 p.m.	107 cm.
4-22-58	10:30 a.m.	103 cm.
4-23-58	8:00 p.m.	105.5 cm.
5-6-58	9:30 a.m.	103 cm.
5-7-58	8:30 a.m.	102 cm.
5-7-58	8:50 p.m.	108 cm.

Table 1
Circumference of the Abdomen

sive-aggressive individual. He was overtly cooperative but covertly very reluctant to cooperate in any manner. The major psychiatric finding was the wide discrepancy between his bland, pleasant, smiling demeanor and his total resistance to any form of psychiatric evaluation. He also refused the use of hypnotic drugs. He totally denied significant emotional problems and his attitude toward his illness exhibited "*la belle indifférence*" of a clinical type. Testing with the Minnesota Multiphasic Personality Inventory gave him an elevation of the hypochondriacal, hysterical and depressive scales in a typical "hysterical V" fashion.

DISCUSSION

The case demonstrates the typical symptoms of hysterical abdominal proptosis in the male. The marked abdominal distention and the tense abdominal wall are predominant clinical findings. This involvement of the somatic musculature is quite similar to that found in pseudocystitis and the tenseness of the abdominal wall found on palpation is of diagnostic significance in both conditions. The depression of the diaphragm and lordosis caused by spasm of the sacrospinalis in conjunction with contraction of the upper anterior abdominal wall and relaxation of the lower lateral abdominal muscles produces a typical picture of abdominal distention.

Characteristically these patients have a "non-gaseous" abdominal distention and obtain no relief from belching or passing flatus. Many of the patients have unnecessary surgical procedures. Alvarez¹ reported eleven surgical procedures in one woman.

The onset of this patient's syndrome coinciding with his wife's pregnancy is certainly a significant observation. This, coupled with his extraordinarily passive manner, raises obvious questions concerning

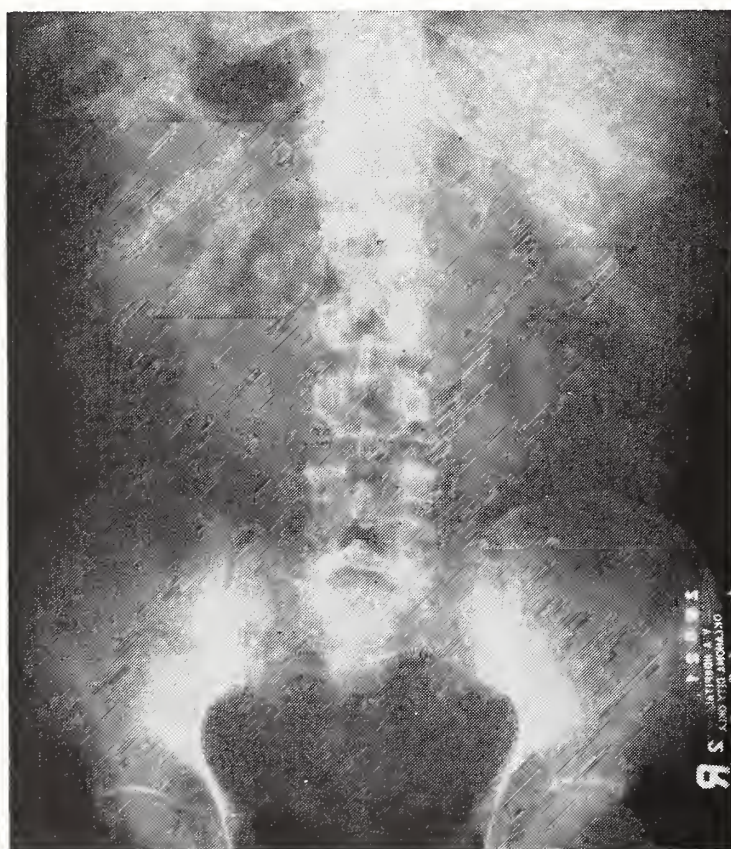


Figure 2. Radiogram of abdomen revealing normal gas pattern.

his psychosexual development and identification. Disturbances of identification have been described previously as significant in the psychodynamics of pseudocyesis. The persistence of his symptoms for 16 years undoubtedly reflects, at least in part, the secondary gains (partial disability with the V. A.) from his illness.

SUMMARY

A case of hysterical abdominal proptosis

has been presented with a discussion of the possible mechanisms. □

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Walter L. Honska, M.D.
2224 West Sherwood, Stillwater, Oklahoma

OSMA REGIONAL POSTGRADUATE COURSE

"CENTRAL NERVOUS SYSTEM"

Hi-Lo Motel

—

APRIL 23, 1963

—

Stillwater, Oklahoma

AFTERNOON

EVENING

4:30 p.m. Convulsive Diseases—
Clinical Advances

5:00 p.m. Strokes—Diagnostic Problems

5:30 p.m. Uses and Abuses of Tranquilizers
and Other Psychotropic Agents

7:00 p.m. Therapy and Basis of Therapy
a. Tranquilizers

b. Convulsive Disorders

c. Strokes

Instructors: C. G. Gunn, M.D., G. R. Haase, M.D., John H. Gogerty, Ph.D.

REGISTRATION FEE \$7.50 (Includes Dinner)

AAGP Credit—4 Hours—Category 1

Trochlear Nerve Palsy

Following Spinal Anesthesia, A Case Report

A. A. LEDBETTER, JR., M.D.
JAMES H. ELLIOTT, M.D.

EXTRA-OCULAR MUSCLE nerve palsies following spinal anesthesia have been described since 1906 but in recent years little attention has been given this complication. The following case report and review of the literature is presented to acquaint the physician with this phenomenon.

CASE REPORT

CNK, a 40-year-old mechanic was admitted to the Oklahoma City Veterans Administration Hospital March 12, 1962. He had experienced double vision since February 3, 1962. He had been in good health except for a duodenal ulcer diagnosed in 1945, an appendectomy in 1950 and a benign growth in this throat which was removed in 1959. On January 13, 1962, he underwent elective hemorrhoidectomy. Cyclaine (hexylcaine hydrochloride) 2cc. (50 mg.) with ten per cent dextrose was used for spinal anesthesia. Postoperatively the patient felt well except for postural headache. On February 3, 1962, he noted sudden onset of diplopia, particularly on looking down and to the left. He returned to his physician who referred him to an ophthalmologist and a neurosurgeon. The patient was reassured that the condition would clear without therapy. In the interval he failed to improve and came to the Vet-

erans Hospital for admission.

There was no history of trauma, recent headache, dizziness, nausea, auditory difficulties, diabetes or other neurologic symptoms.

Physical examination revealed a well developed, well nourished, white male with a patch over his right eye. His blood pressure was 120/70, pulse 76, respiration 14, and temperature 98.6°. Eye examination showed 20/20 visual acuity bilaterally without correction. Pupillary reactions were normal. Special examinations for extra-ocular muscle balance revealed paresis of the right superior oblique muscle. Slit lamp, fundoscopic and visual field examinations were normal. Neurological examination was normal except for paresis of the right trochlear nerve.

Laboratory studies showed a hemoglobin of 14.8 gms. per cent and a white blood count of 10,900 cells per cubic mm. The two hour post prandial blood sugar was 80 mg. per cent; the fasting blood sugar was 73 mg. per cent. The total eosinophile count was 220 per cu. mm. and serological tests for syphilis were negative. Gastric analysis revealed 79°, 118°, and 90° of free hydrochloric acid following stimulation with 10 units of regular insulin. Routine urinalysis, bromsulfalein excretion, blood urea nitrogen and urine porphobilinogen and serum glutamic oxaloacetic transaminase determinations were normal.

Radiographic examinations of the chest and skull were normal, while those of the upper gastro-intestinal tract revealed a small ulcer crater in the post-bulbar duodenum.

Shortly after admission to the hospital the patient was placed on a medical ulcer regimen. Lumbar puncture was performed, with an opening pressure of 205 mm. of water and a closing pressure of 110 mm. of water. The spinal fluid was clear, no cells were present. Total protein was 25 mg. per cent, sugar was 55 mg. per cent and serological test for syphilis on the spinal fluid was negative. Intravenous injection of 10 mg. Tensilon (edrophonium chloride) to rule out myasthenia gravis failed to improve the diplopia. Re-evaluation did not show any change in the neurologic examination and the patient was discharged. A telephone conversation with his private physician revealed that the patient was free of diplopia one month after discharge.

DISCUSSION

The first case reports of extra-ocular muscle palsies as a result of spinal anesthesia were made in 1906 by Muhsam and Landow.⁴ Great interest in this condition was shown in the world literature in the early part of the century but in the last decade it has dwindled.

The major diseases which must be considered in the differential diagnosis of extra-ocular muscle palsies (acquired) are summarized in table I.

The general incidence of extra-ocular muscle palsies following spinal anesthesia has been 0.06 per cent to 0.5 per cent according to various authors. Table II summarizes several large series. According to Blatt¹ the abducens nerve is involved in 92 per cent of the cases, the oculomotor nerve in five per cent and the trochlear nerve in three per cent. Bilateral involvement occurs in 25 per cent of all cases of abducens paralysis. All cranial nerves except the first, ninth, and tenth have been similarly involved but less commonly than the nerves supplying the extra-ocular muscles.⁷

Reports prior to the 1930's revealed a greater incidence of post spinal complications of all types than those following 1930, due to the large bore needles and more toxic anesthetic agents in use.^{11, 12} Blatt (1929),¹ in evaluating extra-ocular paresis following spinal anesthetics, implicated Stovaine (amylocaine hydrochloride) in 64 per cent

I. INFECTIONS

A. Viral encephalomyelitis

- | | |
|--------------------------|--------------|
| 1. Poliomyelitis | 5. Varicella |
| 2. Vaccinal encephalitis | 6. Measles |
| 3. Rabies | 7. Mumps |
| 4. Variola | 8. Influenza |

B. Bacterial Encephalitic Infections

- | | |
|------------------|-------------------|
| 1. Typhoid | 5. Whooping cough |
| 2. Typhus | 6. Gas gangrene |
| 3. Scarlet fever | 7. Septicemia |
| 4. Malaria | 8. Pneumonia |

C. Neuritic Infections

- | | |
|-------------------|----------------------|
| 1. Herpes zoster | 5. Cranial sinusitis |
| 2. Uveo-parotitis | 6. Orbital abscess |
| 3. Meningitis | 7. Nasal sinusitis |
| 4. Petrositis | |

D. Widespread Infections

1. Meningo-vascular syphilis
2. Tuberculosis
3. Torulosis

E. Toxic bacterial conditions

- | | |
|---------------|-------------|
| 1. Diphtheria | 3. Botulism |
| 2. Tetanus | |

II. METABOLIC DISEASES

- | | |
|------------------------------|----------------------|
| 1. Thiamine deficiency | 4. Diabetes mellitus |
| 2. Nicotinic acid deficiency | 5. Thyrotoxicoses |
| 3. Ascorbic acid deficiency | 6. Anemias |

III. Intoxications from exogenous poisons

A. Metallic: Lead

B. Organic

- | | |
|--------------------|----------------------|
| 1. Hydrocarbons | 4. Alcohol |
| 2. Barbiturates | 5. Spinal anesthesia |
| 3. Carbon monoxide | |

IV. Vascular Lesions

- | | |
|----------------|--|
| 1. Aneurysms | 3. Hemorrhage and thromboses of midbrain |
| 2. A-V fistula | 4. Ophthalmoplegic migraine |

V. Neoplasms

A. Direct involvement

B. Diffuse intracranial pressure

VI. Trauma

VII. Neurologic diseases

- | | |
|-----------------------|-------------------------|
| 1. Myasthenia gravis | 3. Muscular dystrophies |
| 2. Multiple sclerosis | 4. Tabes dorsalis |
| | 5. Hereditary ataxia |

Table I*

Differential Diagnosis of Acquired Extra-Ocular Muscle Palsies

*Condensed from Duke-Elder, Text-book of Ophthalmology, Vol. IV, page 4097, C. V. Mosby Co., St. Louis, Mo., 1949.

of cases, Novocaine (procain hydrochloride) in 26 per cent of cases, Tropocaine (tropacocaine hydrochloride) in seven per cent of cases, and cocaine (cocaine hydrochloride) in three per cent.

Author	No. Cases With Spinals	Cases Reported	Incidence of E.O.M Paresis	Incidence of Visual Sx.
Blatt	Not given	88	—	—
Thorsen	2,493	8	0.3%	2.4%
Fairclough	2,021	10	0.5%	Not reported
Vandam and Dripps	10,098	6	0.06%	0.4%

Table II

Symptoms preceding diplopia are generally headache, dizziness, nausea and photophobia. All authors agree that diplopia occurs from three to 21 days after the anesthetic. Other ocular symptoms include blurred vision, flickering, confluent letters and visual sloping lines.¹¹ Thorsen reported visual symptoms in 2.4 per cent of 2,493 cases following spinal anesthesia but the incidence of manifest paresis was only 0.3 per cent.¹¹ According to Hayman and Wood,⁷ symptoms occur more frequently in women and involvement is usually unilateral. They also noted the onset of symptoms in 50 per cent of the cases in the first week, in 90 per cent within the first two weeks and the remaining ten per cent by the end of the third week after the anesthesia. Levine⁸ and Fawcett⁶ postulated that a neurotic or functional background is a predisposing factor. Vandam and Dripps,¹² as well as Levine,⁸ also state that ocular nerve palsies after spinal anesthesia may be the first signs of organic neurologic disease.

Three theories have been proposed to explain this complication: toxic, inflammatory and mechanical.

TOXIC THEORY

A. Reasons for support

1. Spielmeyer¹⁰ showed that toxic anesthetic agents produced lesions on axon cylinders directly with secondary changes in ganglion cells and nuclei.
2. Blatt¹ demonstrated a higher incidence of abducens nerve involvement with the crude spinal anesthetic agents.
3. Vandam and Dripps¹² showed a lower incidence of extra-ocular muscle paresis with modern spinal anesthetic agents.
4. The abducens nerve, because of its long anatomical course, is in contact

with the spinal fluid more than the other cranial nerves. Therefore, any toxic drug action in spinal fluid would explain the high incidence of abducens nerve paresis.

B. Criticisms

1. Thorsen¹¹ injected anesthetic agents directly into the fourth ventricle and failed to produce nerve palsies.
2. Vandam and Dripps¹² point out that involvement is usually unilateral and may occur following lumbar puncture without introduction of foreign material.
3. The time lapse from anesthesia to the onset of paresis does not support this theory.

INFLAMMATORY THEORY

A. Reasons for support

1. The frequent association of headache and meningismus prior to the onset of extra-ocular muscle palsy suggest a low grade meningitis or adhesive arachnoiditis.⁷
2. Davis³ and his co-workers showed that there are cellular and chemical changes in the spinal fluid following lumbar anesthesia.
3. Hayman and Wood⁷ believed that the meningitis was a low grade infection produced by organisms of low toxicity. They quote cases of extra-ocular muscle palsies following ventriculograms in support of their belief.

B. Criticisms

1. Spinal punctures are usually sterile.
2. Involvement is usually unilateral.
3. The time of onset required by such a long incubation period makes this theory unlikely.

MECHANICAL THEORY

A. Reasons for support

1. All cranial nerves, as they depart from the cranial vault, are fixed by the dural covering. Therefore, any decrease in spinal fluid pressure with a subtle shift of the brain could cause nerve pressure by kinking, bending or shearing with subsequent paresis.⁹
2. Cushing (1912)² believed that ab-

ducens nerve palsy resulted from pressure induced by the crossing of the anterior inferior cerebellar artery on the nerve following decreased spinal fluid pressure.

3. Penfield and Norcross⁹ believed that gravitation of brain structures caudally produced traction on cranial nerves over bony prominences. Unilateral involvement in this theory may be explained by asymmetry or unilateral prominence of a petrosal ridge resulting in abducens nerve palsy.
4. Vandam and Dripps¹² have shown that vasodilation of intracranial vessels occurs following spinal anesthesia and pressure on nerve roots from dilated vessels may produce paresis.
5. Vandam and Dripps¹² also felt that hypotension of spinal fluid occurred due to leakage at the dural opening. Gravitation of the brain structures does not occur until the erect position is obtained. After closure of the dural opening the cerebrospinal fluid dynamics are restored and the nerve recovers where only reversible damage is done. They could correct extraocular muscle paresis by direct infusion of saline into the subarachnoid space.
6. The abducens nerve because of its long course comes in contact with the pons, occipital bone, petrous ridge, intracranial blood vessels and the cavernous sinus where pressure changes may occur. This would explain the high incidence of involvement of the abducens nerve in contrast to the trochlear nerve which anatomically has less contact with brain structures.

B. Criticisms

1. Hypotension of the cerebro-spinal fluid cannot be demonstrated in all cases.
2. The mechanical theory does not explain the time lapse of three to 21 days. One would presume that extraocular muscle palsy would occur soon after the patient became ambulatory.

There is not enough experimental data to support any of these theories. Although the mechanical theory is the most popular, no theory explains all facets of the problem. It

may be that combinations of these theories play a role in the development of this complication.

Haymen and Wood's⁷ series showed a duration of paresis in 54 per cent of cases for one month, 26 per cent between five-eight weeks, ten per cent from nine-12 weeks and ten per cent lasted three-12 months. Most cases clear spontaneously without treatment, however, a few exceptions are reported.

The best treatment is prophylaxis. This can be accomplished by strict asepsis, use of small gauge spinal needles, newer and less toxic anesthetic agents, adequate hydration following spinal puncture and maintaining a strict supine position. Monocular alternating cover with a black patch or a smoked glass lens over one eye may be used for relief of diplopia until spontaneous recovery occurs. This problem should not have corrective muscle surgery for 18 to 24 months.^{6, 7} Following this interval, binocularity can be accomplished usually by corrective muscle surgery and the use of prisms.

SUMMARY

A case of trochlear nerve paresis following lumbar anesthesia is presented. A review as to the time of onset, incidence, symptoms, etiologic factors, duration, and treatment is discussed. It is hoped that this rare complication following spinal anesthesia will be included in the differential diagnosis of acquired extra-ocular muscle palsy. □

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A. A. Ledbetter, M.D.

U.S. Army Hospital, Fort Hood, Texas

STILL MORE ABOUT ATHEROSCLEROSIS

Werthessen has reviewed a number of investigations dealing with atherogenesis and lipid metabolism and has concluded that an unknown factor in the wall of the artery itself is the prime cause of atherosclerosis.* Available evidence suggests that while the aorta obtains more than half of its cholesterol from the serum, it synthesizes the remainder itself. Furthermore, acetate is not a required building block and lipid end-products are numerous.

If the observations from *in vitro* tissue culture experiments are applicable to the aorta of the intact animal, several important inferences can be made. The accumulation of cholesterol within the aortic wall varies with the amount of glucose it consumes and with the blood pressure. Vitamins and hormones also affect the synthesis of lipids and their movement out of the vascular wall.

That there is an hereditary aspect to this disease is evident from the work of Lofland and Clarkson with pigeons. They found two strains: one which readily developed atherosclerosis and another which was resistant. Feeding cholesterol to the susceptible birds produced a greater change in serum lipids than in the non-susceptible. Furthermore, cross-breeding of these strains produced a third strain of intermediate susceptibility. One of the most fascinating indications of the inherited character of this function however has been found in tissue culture studies. When segments of normal and atheromatous human aorta are cultured it has been shown that the progeny cells of the two differ in their metabolic characteristics even after the original tissue slices have been removed, suggesting that once this altered metabolism is "learned" by the cell, it is passed on to its descendants.

REVIEWER'S NOTE: The outreaching imagination of man is reflected in the ingenious approaches and the sophistication of techniques employed in these studies. When this reviewer was an intern, a pathologist in San Francisco achieved regional fame for his tosspot chickens. As a coroner's examiner, he had noted that many of the skidrow residents who wound up on his enameled table showed little or no atherosclerosis. Wondering whether or not this might represent a function of the ethanol they imbibed, he raised two groups of cockerels, one with wine and the other with water. To the chagrin of local temperance groups, the fuzzled fowl developed fewer atheromata than did those who led abstemious lives. The significance of this for humans remains comfortably obscure.

*The Site of the Primary Lesions in Atherosclerosis. N. T. Werthessen. *Angiology* 13: 520-529 (November) 1962.

MORE ABOUT STRESS, BLOOD LIPIDS, AND CORONARY DISEASE

Four internists and a psychiatrist have studied the life situations of a group of male patients who had myocardial infarctions and measured their serum lipids at fairly regular intervals over a prolonged period.* The lipid levels found were subsequently compared with the emotional status of the patient. Of the 14 patients who made up the original study group which started in 1956,

six are known to be dead, three have been lost to follow-up, and five have been followed for a seven-year period.

The personality structure of all of these patients was strikingly similar in that all had a strong motivation to put forth their greatest efforts, yet took little satisfaction or comfort from their accomplishments, and took no "time out" from duty. The authors have compared these patients with Sisyphus, a figure in Greek mythology who was condemned to roll a great stone up a hill. As he neared the top, the stone always escaped his grasp and rolled down again, so that his task was never completed.

It was found that the serum lipids of the patients tended to rise significantly during periods of difficulty in either the work situation or the domestic scene. Further, when these patients were stressed by interviewing them about matters which were known to be disturbing to them, the serum lipids were found to rise. Conversely, when an interview designed to be neutral in content was conducted, their lipids decreased.

A group of seven "normal" subjects were also studied by measuring their serum lipids at weekly intervals and comparing these with their emotional states. Again it was found that lipids rose during periods of difficulty, and declined when all was going well.

REVIEWER'S NOTE: Once more, highly suggestive evidence had been brought forth to support the role of stress in coronary artery disease. Many physicians have for a long time noted that certain of their patients having this intense type of personality seemed more prone to have heart attacks than did others, but no very specific information about the mechanism was evident. It seems that too much concern means too much lipid in the blood, and the patients in this study certainly exhibited more than their share of concern about their role in this world. While we are still unable to state with assurance that high lipid levels cause atherosclerosis (or even agree upon the causes of the former) the evidence of guilt by association is rather impressive. Having protected his lungs by renouncing the pleasures of tobacco, and guarded his girth by foregoing sausage and buckwheat cakes at breakfast, this reviewer has now resolved to maintain a cheerful attitude toward life, and to reserve his extrasystoles solely for pretty girls.

*The Relation of Life Stress to the Concentration of Serum Lipids in Patients with Coronary Artery Disease. Charles Cathey, Harry B. Jones, John Naughton, James F. Hammarsten, and Stewart Wolf. *American Journal of the Medical Sciences* 244: 421-441 (October) 1962.

RECENT PUBLICATIONS FROM THE MEDICAL CENTER

The Effect of Norepinephrine and Hypoxemia on Coronary Vascular Resistance. M. Brandfonbrener, D. Gracey, R. Nice, and F. J. Haddy. *Federation Proceedings* 21: 106, 1962.

Effect of Amethopterin on Visceral Concentration of Co⁶⁰B₁₂ in the Mouse. J. D. Welsh, E. N. Brandt, Jr., and P. T. Condit. *Proceedings of the Society for Experimental Biology and Medicine* 109: 734, 1962.

Reprints of the above publications are usually available on request from the senior author, c/o Mrs. Joan Campbell, Veterans Administration Hospital, 921 N.E. 13th Street, Oklahoma City, Oklahoma.

FACULTY NEWS

William S. Middleton, M.D. Takes OU Appointment

William S. Middleton, M.D., Veterans Administration medical director, Washington, D.C., will spend a year on the faculty of the University of Oklahoma School of Medicine following his retirement from the VA this winter.

He has been appointed a visiting professor of medicine, effective July 1.

Doctor Middleton was dean of the University of Wisconsin Medical School, Madison, for 20 years before taking the VA position in 1955. He had taught at Wisconsin since 1912, moving up from instructor to professor and into the deanship.

Describing him as "one of the great bedside teachers," Stewart Wolf, M.D., head of the Department of Medicine, said Doctor Middleton had expressed a desire to return to his first love — "teaching and cultivating in students a concern for the patient."

Doctor Middleton received his M.D. degree in 1911 at the University of Pennsylvania School of Medicine and interned at Philadelphia General Hospital. He holds honorary degrees from Pennsylvania, Cambridge, Temple, Franklin and Marshall, and Marquette universities.

Service Pins Awarded To OU Faculty Members

Sixty-six faculty members were honored by the University of Oklahoma Medical Center recently at the seventh annual service pin award ceremony.

Heading the list of those who reached service milestones this year were three Oklahoma City physicians, Clark H. Hall, M.D., Basil A. Hayes, M.D., and Carroll, M. Pounders, M.D., who were awarded 40-year pins.

Doctors Hall and Pounders are professors emeritus of pediatrics; Doctor Hayes, professor emeritus of urology.

Pins were presented by Mark R. Everett, Ph.D., D.Sc., director and dean. A total of 121 Medical Center employees also received pins in recognition of five year service anniversaries. Recipient with the great-

est seniority was Jessie E. Collier of the Department of Gynecology and Obstetrics.

Thirty-five year awards went to two faculty members: Earl D. McBride, M.D., clinical professor of orthopedic surgery, and Francis J. Reichmann, D.D.S., clinical professor of oral surgery.

Cited for 30 years service as teachers were Herman Fagin, M.D., associate professor of medicine; Ben H. Nicholson, M.D., clinical professor of pediatrics and Oscar R. White, M.D., clinical professor of surgery.

Five were recognized for 25 years faculty duty: George N. Barry, M.D., associate professor of medicine; Austin H. Bell, M.D., clinical professor of surgery; Grace C. Hassler, M.D., clinical professor of anesthesiology; David D. Paulus, M.D., associate professor emeritus of medicine and Delbert G. Smith, M.D., clinical professor of gynecology-obstetrics.

Other awards:

Twenty years — Harry T. Avey, M.D., Marvin B. Glismann, M.D., and Edward E. Shircliff, M.D., Department of Medicine; Harold J. Binder, M.D., Department of Psychiatry; J. Moore Campbell, M.D., Department of Surgery; Albert R. Drescher, D.D.S., Division of Oral Surgery; Alton C. Kurtz, Ph.D., Department of Biochemistry and Sylvester R. Shaver, M.D., Department of Otorhinolaryngology.

Fifteen years — Vernon D. Cushing, M.D., Robert C. Lawson, M.D. and Wiley T. McCollum, M.D., Department of Medicine; Garmon H. Daron, Ph.D., Department of Anatomy; Edwin Fair, M.D. and Harold W. Hackler, M.D., Department of Psychiatry; Edwin N. Robertson, M.D., Department of Ophthalmology; Harlan K. Sowell, M.D. and James R. Walker, M.D., Department of Anesthesiology; and Mary Zahasky, Department of Dietetics.

Ten years — James S. Binkley, M.D., Irwin H. Brown, M.D., Allen E. Greer, M.D., and Ira O. Pollock, M.D., Department of Surgery; Robert M. Bird, M.D., John P. Colmore, M.D., Arthur F. Elliott, M.D., Virgil Ray Forester, M.D., Robert H. Furman, M.D., Robert P. Messinger, M.D., William R. Paschel, M.D., William S. Pugsley, M.D.,

Robert A. Schneider, M.D., Byron F. Smith, M.D., William Best Thompson, M.D., Kelly M. West, M.D. and Stewart G. Wolf, M.D., Department of Medicine;

Also — Clifford J. Blair, M.D., and Richard Wyrick, M.D., Department of Ophthalmology; John L. Boland, Ph.D., Robert L. Casebeer, M.D., John C. Pickard, M.D., and Ethan A. Walker Jr., M.D., Department of Otorhinolaryngology; Carl R. Doering, M.D., Sc.D., and Philip E. Smith, Sc.D., Department of Preventive Medicine; Winfield Evans and Dave Lhevine, M.D., Department of Radiology;

Thomas H. Miley, D.D.S., and Frank W. Stewart, D.M.D., Division of Oral Surgery; Richard W. Payne, M.D., Department of Pharmacology; George T. Price, D.V.M., Department of Pathology; and John R. Stacy, M.D., Department of Orthopedic Surgery; John M. Hale, Ph.D., Department of Microbiology and Carl Kreiger Jr., M.D., Department of Anesthesiology.

Five year faculty pins are awarded preceptors only. The 1962 recipient was C. K. Holland, M.D., McAlester. □

G. R. Ridings, M.D. Goes To University of Missouri

G. R. Ridings, M.D., resigned as head of the Department of Radiology in January to join the faculty at the University of Missouri Medical Center as professor of radiology and director of the University Hospital Radiation Therapy Section.

No successor has been named. Gaylord Knox, M.D., associate professor of radiology, is acting head.

Doctor Ridings came to the University of Oklahoma Medical Center in 1957 as the first full-time head of the radiology department. He had been an associate professor at the University of Mississippi Medical Center. □

House Staff Physicians Will Meet in May

Annual scientific program of the Oklahoma Association of House Staff Physicians will be Saturday, May 11, in the Oklahoma City VA Hospital Auditorium.

The Intern-Resident Day program includes papers by the house staff physicians and lectures by guests Mark Ravitch, M.D., professor of surgery, and Ivan Bennett, M.D., Baxley professor of pathology, both of Johns Hopkins University School of Medicine.

Lloyd Rader, M.D., surgical resident at St. Anthony Hospital, Oklahoma City, is program chairman. □

Sooner Medic Out in May

The 1963 Sooner Medic, University of Oklahoma School of Medicine annual, will be off the press in May, the staff announces. Co-editors of the student publication are Larry Long, Enid, and Jim Turner, Oklahoma City. Tom Stanley, Oklahoma City, is business manager. All are fourth year students. □

Preceptors Named

Four new preceptors were appointed to the University of Oklahoma School of Medicine faculty this spring. They are: O. H. Patterson, M.D., Sapulpa, Eugene S. Bell, M.D., Tishomingo, R. L. Winters, M.D., Poteau, and K. E. Whinery, M.D., Sayre. Doctors Winters and Whinery formerly served as preceptors. □

Holsted Wins LeRoy Long Prize

Carroll E. Holsted, first year student from Carnegie, has been awarded the LeRoy Long Prize for the highest scholastic record in gross anatomy in his class at the University of Oklahoma School of Medicine.

He received Callander's *Surgical Anatomy*. A second award was presented this year because of a near-tie. Runner-up Joseph B. Frey, Chickasha, was given Zuckerman's *A New System of Anatomy*. □

1963

*A Red Letter Year
for the Annual Meeting!*

Oklahoma State Medical Association



J. Hoyle Carlock, M.D.
Ardmore
President



Frances P. Newlin, M.D.
Shawnee
Vice-President



Mark R. Johnson, M.D.
Oklahoma City
Secretary-Treasurer

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Delegate to the A.M.A.—Malcom E. Phelps, M.D., El Reno
Alternate Delegate to the A.M.A.—Thomas C. Points, M.D., Oklahoma City
Speaker of the House of Delegates—Marshall O. Hart, M.D., Tulsa
Vice-Speaker—C. M. Hodgson, M.D., Kingfisher
Editor-in-Chief—C. B. Dawson, M.D., Oklahoma City

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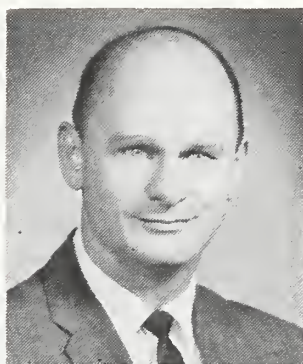
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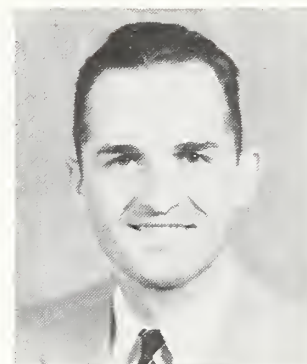
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 Trustee (1963).....R. R. Hannas, M.D., Sentinel

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Program Chairman

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AMERICANISM FORUM

Worth M. Gross, M.D., *Chairman*

ACKNOWLEDGMENT

The Oklahoma State Medical Association wishes to thank the following for special services and grants in connection with the preparation of the program and arrangements: Merck Sharp & Dohme, Eli Lilly & Company, G. D. Searle & Sons, the Oklahoma Chapter of the International College of Surgeons, the American College of Chest Physicians, Answering Tulsa Company, and Liberty Mutual Insurance Company.

DIGEST OF EVENTS

HOTEL ACCOMMODATIONS

The Mayo, Tulsa's largest and finest hotel, will be headquarters for the 57th Annual Meeting. A large block of choice rooms and suites has been reserved for members of the Oklahoma State Medical Association. Physicians are requested to make their own reservations by writing: Mr. John Sexton, Resident Manager, The Mayo, 5th and Cheyenne Streets, Tulsa, Oklahoma. Please state dates and times of arrival and departure and specify type of accommodations desired. Reservations will be promptly confirmed by mail. Early reservations are suggested.

GENERAL REGISTRATION

Registration will open Friday, May 3, at 8:30 a.m. in the Main Lobby Exhibit Area. Delegates and Alternates are requested to register at a special registration desk outside the Pompeian Court on the Mezzanine of The Mayo.

BOARD OF TRUSTEES

The Board of Trustees of the Oklahoma State Medical Association will meet on Thursday, May 2, at 1:30 p.m. in the Pompeian Court on the Mezzanine of The Mayo.

HOUSE OF DELEGATES

The House of Delegates of the Oklahoma State Medical Association will meet on Friday, May 3, at 10:00 a.m. in the Pompeian Court on the Mezzanine of The Mayo. The House will recess for reference committee hearings at the close of the first session, and will reconvene at an hour to be announced by the Speaker.

SCIENTIFIC SESSIONS

The scientific program will open at 9:00 a.m. on Friday, May 3, in the Crystal Ballroom. Scientific sessions will be held all day Friday and Saturday, May 3-4, and Sunday morning, May 5, in the Crystal Ballroom. A concurrent scientific session will also be held on Saturday afternoon and Sunday morning, May 4-5, in the Emerald Room. A complete



program appears in this issue of *The Journal*. Visiting physicians may select from a wide range of presentations by distinguished guest speakers. Two important symposiums are also scheduled. On Saturday, May 4, a symposium on "The Management of Disabling Pain of Non-Articular Rheumatic Origin" will be held in the Crystal Ballroom at 2:00 p.m. On Sunday morning, May 5, a symposium on "Rehabilitation of the Cardiac Patient" is scheduled for 10:25 a.m. Fifteen hours credit, Category II, will be granted to members of the American Academy of General Practice in attendance.

ROUNDTABLE LUNCHEON

A roundtable luncheon will be held on Saturday, May 4, at 12:30 p.m. in the Pompeian Court. Visiting distinguished guest speakers will constitute a discussion panel and answer questions from the audience. Tickets for this event should be purchased at the General Registration Desk in the Main Lobby Exhibit Area at the time of registering. Tickets are \$2.75 each.

AMERICANISM FORUM

The popular Americanism Forum which attracted such favorable comment from a capacity audience at the last Annual Meeting will be repeated on Friday, May 3. A luncheon will be held in the Ivory Room at 12:30 p.m., at which Mr. Leonard E. Read, President of the Foundation for Economic Education, Irvington-On-Hudson, New York, will be speaker on "The Constitution—Yesterday and Today." Tickets are \$2.75 and may be purchased at the General Registration Desk in the Main Lobby Exhibit Area. The Americanism Forum will continue at 2:00 p.m. in the Emerald Room with a panel of distinguished economists and authorities in government, finance and legislation.

FIRESIDE CONFERENCES

An extra added attraction will be a repeat performance of the popular Fireside Conferences on Friday evening, May 3. Sponsored by the American College of Chest Physicians in cooperation with the Oklahoma State Medical Association, this event will open with a social hour and dinner at 6:30 p.m. in the Ivory Room of The Mayo. Seven roundtables will offer a wide variety of subjects of general interest to physicians. A complete schedule appears in the scientific program in this issue of *The Journal*. Dinner will be \$5.00 per person, including social hour, and tickets may be purchased at the General Registration Desk in the Main Lobby Exhibit Area. Coffee, beer and soft drinks will be served during the roundtables.

HOBBY SHOW

The Doctors Hobby Show, sponsored by the Woman's Auxiliary, will display the leisure-time crafts and hobbies of practicing physicians and their wives. This popular feature may be seen on the 16th Floor of The Mayo adjacent to the technical exhibit area Friday through Sunday, May 3-5.

TECHNICAL EXHIBITS

Thirty-seven displays by firms whose products and services are of interest to physicians may be seen in the Main Lobby and on the 16th Floor of The Mayo, Friday and Saturday, May 3-4, from 9:00 a.m. to 5:00 p.m., and on Sunday, May 5, from 9:00 a.m.

to 1:00 p.m. A complete list of exhibitors appears in this issue of *The Journal*.

GOLF TOURNAMENT

The 1963 Annual Golf Tournament of the Oklahoma State Medical Association will be held on Friday, May 3, at beautiful Oaks Country Club. Golfing begins at 10:00 a.m. The greens fee will be \$3.00 per person. A social hour is scheduled for 5:30 p.m., followed by a delicious prime rib buffet dinner. Dinner will be \$3.75 per person. Golf winners will receive attractive prizes and trophies.

PRESIDENT'S INAUGURAL DINNER-DANCE

The President's Inaugural Dinner-Dance will be an event of Saturday, May 4, opening with a social hour in the Pompeian Court and Founder's Room of The Mayo at 6:30 p.m. Dinner will be served at 7:30 p.m. in the Crystal Ballroom, followed by the inaugural ceremonies. Dancing to the music of Leon McAuliff and his orchestra, ABC recording artists and television personalities, will begin at 9:00 p.m. Tickets are \$7.50 per person and may be ordered in advance from the Tulsa County Medical Society, B9 Medical Arts Building, Tulsa. Attendance is limited to 400 persons, and any tickets remaining from the advance sale will be available at the General Registration Desk in the Main Lobby. Checks should be made payable to "Oklahoma State Medical Association."

WOMAN'S AUXILIARY MEETING

The Woman's Auxiliary to the Oklahoma State Medical Association will meet May 3-4. A complete program appears elsewhere in this issue of *The Journal*.

PAST-PRESIDENT'S BREAKFAST

The Annual Past-President's Breakfast of the Oklahoma State Medical Association, sponsored by Blue Cross-Blue Shield, will be held at 8:15 a.m. on Saturday, May 4, in the Ivory Room.

OMPAC

All physicians and wives who are members, or who are interested in becoming members, of the Oklahoma Medical Political Action Committee are invited to attend a meeting of the group on Sunday, May 5, at 1:00 p.m. in the Emerald Room.

Distinguished Guest Speakers



JAMES O. ELAM, M.D.
Anesthesiology
Buffalo, New York

Associate Professor of Anesthesiology, University of Buffalo School of Medicine.



JAMES L. GODDARD, M.D.
Public Health
Atlanta, Georgia

Assistant Surgeon-General and Director of Communicable Disease Center, United States Public Health Service.



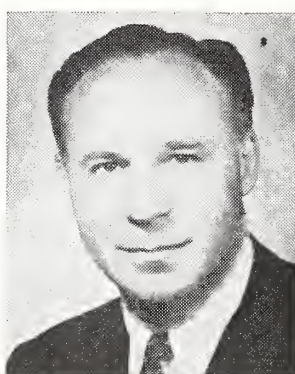
ALFRED GOLDMAN, M.D.
Internal Medicine
St. Louis, Missouri

Professor of Medicine, St. Louis University School of Medicine.



JAMES T. GRACE, JR., M.D.
Surgery
Buffalo, New York

Assistant Professor of Surgery, University of Buffalo School of Medicine.



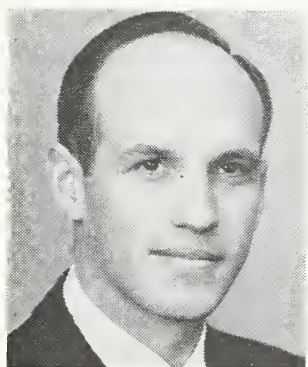
ROBERT B. GREENBLATT, M.D.
Endocrinology
Augusta, Georgia

Professor of Endocrinology, Medical College of Georgia.



HERMAN K. HELLERSTEIN, M.D.
Internal Medicine
Cleveland, Ohio

Assistant Professor of Medicine, Western Reserve University School of Medicine.



JOHN M. KNOX, M.D.
Dermatology
Houston, Texas

Associate Professor of Dermatology, Baylor University School of Medicine.



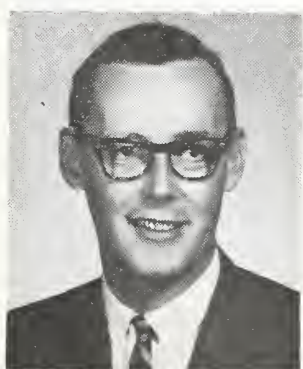
L. MAXWELL LOCKIE, M.D.
Arthritis and Rheumatism
Buffalo, New York

Chairman of the Department of Therapeutics, University of Buffalo School of Medicine.



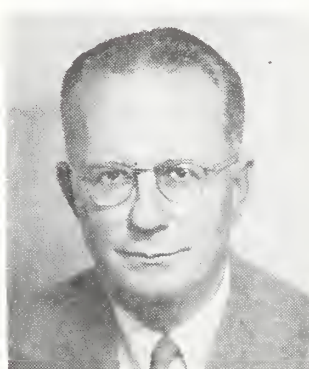
J. T. MacDOUGALL, M.D.
Surgery
Winnipeg, Manitoba

Assistant Professor of Surgery, University of Manitoba School of Medicine.



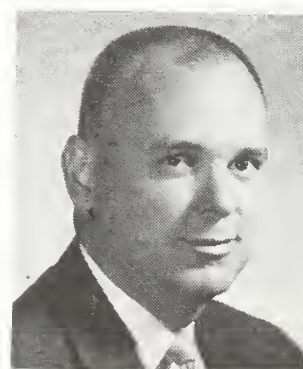
WILLIAM J. McGANITY, M.D.
Obstetrics and Gynecology
Galveston, Texas

Chairman of the Department of Obstetrics and Gynecology, University of Texas School of Medicine.



JOHN H. MOE, M.D.
Orthopedic Surgery
Minneapolis, Minnesota

Chairman of the Department of Orthopedic Surgery, University of Minnesota School of Medicine.



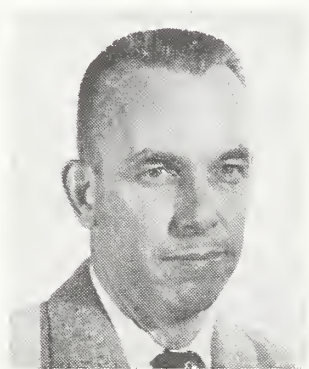
LLOYD M. NYHUS, M.D.
Surgery
Seattle, Washington

Associate Professor of Surgery, University of Washington School of Medicine.



THEODORE C. PANOS, M.D.
Pediatrics
Little Rock, Arkansas

Chairman of the Department of Pediatrics, University of Arkansas School of Medicine.



CARL M. PEARSON, M.D.
Internal Medicine
Los Angeles, California

Associate Professor of Medicine, University of California School of Medicine.



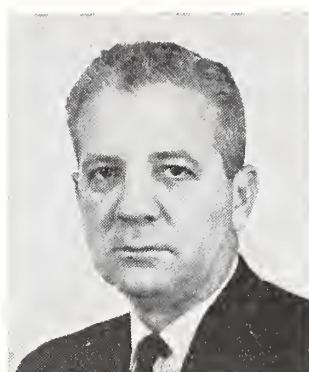
WILLIAM W. SCOTT, M.D.
Urology
Baltimore, Maryland

Professor of Urology, Johns Hopkins School of Medicine.



NORMAN SIMON, M.D.
Radiology
New York, New York

Associate Radiotherapist, Mount Sinai
Hospital of New York.

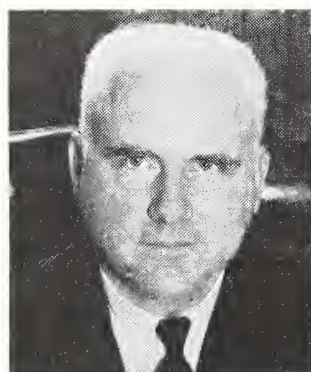


MR. JOHN COUCH
Oklahoma City, Oklahoma
Attorney-At-Law



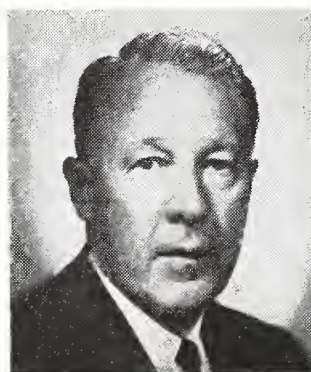
MR. CECIL B. DICKSON
Washington, D.C.

Associate Legislative Director, Amer-
ican Medical Association.



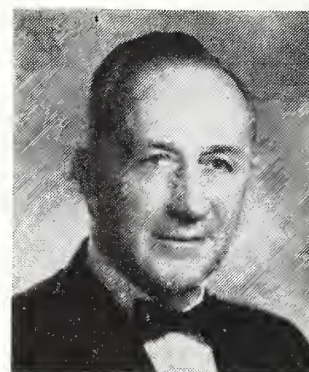
MR. THOMAS J. HARRIS
Oklahoma City, Oklahoma

General Manager, Aero-Commander,
Inc.



MR. LEONARD E. READ
Irvington-On-Hudson, New York

President, Foundation for Economic
Education, Inc.



MR. STEVE STAHL
Oklahoma City, Oklahoma

Executive Vice-President, Oklahoma
Public Expenditures Council.

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President's Inaugural Dinner-Dance

May 4, 1963

Crystal Ballroom

Mayo Hotel—Tulsa

- ☆ Cocktails
- ☆ Dinner
- ☆ Inaugural Ceremonies
- ☆ Dancing

Mail order to: Tulsa County Medical Society
B-9 Medical Arts Building
Tulsa, Oklahoma

Price: \$7.50 per person. Make check
payable to "OSMA"

Friday Morning, May 3, 1963

CRYSTAL BALLROOM

Maxwell A. Johnson, M.D., Tulsa, Presiding

- 9:00 a.m. HEPATIC COMA: TREATMENT EMPHASIZING MERIT OF PERITONEAL DIALYSIS
Lester I. Nienhuis, M.D., *Tulsa*
- 9:20 a.m. INFECTIOUS HEPATITIS
James L. Goddard, M.D., *Atlanta, Georgia*
- 9:40 a.m. THE DIAGNOSIS AND TREATMENT OF SLIPPED PROXIMAL FEMORAL EPIPHYSIS IN THE GROWING CHILD
John H. Moe, M.D., *Minneapolis, Minnesota*
- 10:05 a.m. INDICATIONS FOR RADIOTHERAPY
Norman Simon, M.D., *New York, New York*
- 10:40 a.m. Intermission

Vernon D. Cushing, M.D., Oklahoma City, Presiding

- 11:00 a.m. RENAL HYPERTENSION, ITS DIAGNOSIS AND MANAGEMENT
William W. Scott, M.D., *Baltimore, Maryland*
- 11:30 a.m. COLLAGEN DISEASES OF THE LUNG
Alfred Goldman, M.D., *St. Louis, Missouri*

Friday Afternoon, May 3, 1963

IVORY ROOM

Worth M. Gross, M.D., Tulsa, Presiding

- 12:30 p.m. AMERICANISM FORUM LUNCHEON
THE CONSTITUTION—YESTERDAY AND TODAY
Leonard E. Read, President, Foundation for Economic Education, *Irvington-On-Hudson, New York*

EMERALD ROOM

Worth M. Gross, M.D., Tulsa, Presiding

- 2:00 p.m. AMERICANISM FORUM
Steve Stahl, Executive Vice-President, Oklahoma Public Expenditures Council, *Oklahoma City*
Thomas J. Harris, General Manager, Aero-Commander, Inc., *Oklahoma City*
Cecil B. Dickson, Associate Legislative Director, American Medical Association, *Washington, D.C.*
Leonard E. Read, President, Foundation for Economic Education, *Irvington-On-Hudson, New York*

CRYSTAL BALLROOM

Ancel Earp, Jr., M.D., Oklahoma City, Presiding

- 2:00 p.m. THE EVOLUTION OF TREATMENT OF DUODENAL ULCER IN THE MID-TWENTIETH CENTURY
Lloyd M. Nyhus, M.D., *Seattle, Washington*
- 2:50 p.m. TREATMENT OF THE URINARY TRACT
William W. Scott, M.D., *Baltimore, Maryland*
- 3:20 p.m. Intermission

Dixon N. Burns, M.D., Tulsa, Presiding

- 3:30 p.m. SURGICAL MANAGEMENT OF GASTROINTESTINAL CANCER
James T. Grace, Jr., M.D., *Buffalo, New York*
- 4:10 p.m. TUMORS OF THE SKIN
John M. Knox, M.D., *Houston, Texas*

Friday Evening, May 3, 1963

IVORY ROOM

George L. Winn, M.D., Oklahoma City, Presiding

6:30 p.m. FIRESIDE CONFERENCES, Sponsored by the American College of Chest Physicians in cooperation with the Oklahoma State Medical Association
Social Hour (Founders Room)

Dinner. Comments by Alfred Goldman, M.D., Vice-President, American College of Chest Physicians, *St. Louis, Missouri*

IVORY ROOM and EMERALD ROOM

8:15 p.m. FIRESIDE CONFERENCES. ROUNDTABLE DISCUSSIONS:

RADIOLOGICAL ASPECTS OF CHEST DISEASES

Walter E. Brown, M.D., *Tulsa*, Moderator

D. W. McCauley, M.D., *Okmulgee*

Vernon M. Lockard, M.D., *Bartlesville*

Rayburne W. Goen, M.D., *Tulsa*

Floyd J. Moorman, M.D., *Oklahoma City*

Norman Simon, M.D., *New York, New York*

CARDIOVASCULAR AND CHEST SURGERY

Robert M. Shepard, Jr., M.D., *Tulsa*, Moderator

Gilbert S. Campbell, M.D., *Oklahoma City*

Allen Greer, M.D., *Oklahoma City*

John R. Danstrom, M.D., *Oklahoma City*

Robert G. Tompkins, M.D., *Tulsa*

Samuel R. Turner, M.D., *Tulsa*

EMPHYSEMA AND BRONCHITIS

George L. Winn, M.D., *Oklahoma City*, Moderator

Richard M. Burke, M.D., *Oklahoma City*

William E. Ewing, M.D., *Tulsa*

Sol Wilner, M.D., *Tulsa*

J. C. Devine, M.D., *Tulsa*

N. C. Gaddis, M.D., *Tulsa*

Alfred Goldman, M.D., *St. Louis, Missouri*

RESPIRATORY DISEASES

Perry F. Crawford, M.D., *Tulsa*, Moderator

Robert L. Anderson, M.D., *Tulsa*

Charles E. Shopfner, M.D., *Oklahoma City*

Robert S. Ellis, M.D., *Oklahoma City*

Robert A. Nelson, M.D., *Tulsa*

James T. Elam, M.D., *Buffalo, New York*

HYPERTENSION

Robert H. Bayley, M.D., *Oklahoma City*, Moderator

Homer A. Ruprecht, M.D., *Tulsa*

C. S. Lewis, Jr., M.D., *Tulsa*

Edward W. Jenkins, M.D., *Tulsa*

Leon Freed, M.D., *Stillwater*

John P. Colwell, M.D., *Oklahoma City*

CURRENT TRENDS IN CANCER MANAGEMENT

Leonard P. Eliel, M.D., *Oklahoma City*, Moderator

J. W. Murphree, M.D., *Ponca City*

Abe Oyamada, M.D., *Tulsa*

Richard A. Liebendorfer, M.D., *Tulsa*

Joe M. Parker, M.D., *Oklahoma City*

James T. Grace, Jr., M.D., *Buffalo, New York*

TECHNICAL PROBLEMS IN GASTRIC SURGERY

Merlin K. DuVal, M.D., *Oklahoma City*, Moderator

Irwin H. Brown, M.D., *Oklahoma City*

Martin Leibovitz, M.D., *Tulsa*

Edward L. Moore, M.D., *Tulsa*

George M. Brown, Jr., M.D., *McAlester*

Robert G. Perryman, M.D., *Tulsa*

Lloyd M. Nyhus, M.D., *Seattle, Washington*

J. T. MacDougall, M.D., *Winnipeg, Canada*

Saturday Morning, May 4, 1963

CRYSTAL BALLROOM

J. Hoyle Carlock, M.D., Ardmore, Presiding

- 9:00 a.m. EFFECTS OF SUNLIGHT ON THE SKIN
John M. Knox, M.D., *Houston, Texas*
- 9:30 a.m. THE USE OF MECHANICAL DEVICES IN THE TREATMENT OF PULMONARY DISORDERS
James O. Elam, M.D., *Buffalo, New York*
- 10:00 a.m. THE INDUCTION OF LEUKEMIA BY RADIATION
Norman Simon, M.D., *New York, New York*
- 10:35 a.m. Intermission

Nolen L. Armstrong, M.D., Oklahoma City, Presiding

- 10:55 a.m. THE IMMUNOLOGIC ASPECTS OF CANCER
James T. Grace, Jr., M.D., *Buffalo, New York*
- 11:25 a.m. WHAT THE GENERAL PRACTITIONER SHOULD KNOW ABOUT SCOLIOSIS
John H. Moe, M.D., *Minneapolis, Minnesota*

Saturday Afternoon, May 4, 1963

POMPEIAN COURT

Mark R. Johnson, M.D., Oklahoma City, Presiding

- 12:30 p.m. ROUNDTABLE LUNCHEON
Guest Speakers Participating

CRYSTAL BALLROOM

Paul A. April, M.D., Tulsa, Presiding

- 2:00 p.m. SYMPOSIUM: MANAGEMENT OF DISABLING NON-ARTICULAR PAIN OF RHEUMATIC ORIGIN
L. Maxwell Lockie, M.D., *Buffalo, New York*
George J. Friou, M.D., *Oklahoma City*
Carl M. Pearson, M.D., *Los Angeles, California*
Motion Pictures

EMERALD ROOM

Walter E. Brown, M.D., Tulsa, Presiding

- 2:00 p.m. AMENORRHEA FROM A GENETIC VIEWPOINT
William J. McGanity, M.D., *Galveston, Texas*
- 2:30 p.m. SOME CLINICAL USES OF THE NEW ORAL PROGESTINS
Robert B. Greenblatt, M.D., *Augusta, Georgia*
- 3:00 p.m. HERNIATION THROUGH CONGENITAL DIAPHRAGMATIC DEFECTS IN ADULTS
J. T. MacDougall, M.D., *Winnipeg, Manitoba*
- 3:30 p.m. Intermission

William M. Benzing, Jr., M.D., Tulsa, Presiding

- 3:45 p.m. NEW CONCEPTS RELATIVE TO THE REPAIR OF INGUINAL HERNIA
Lloyd M. Nyhus, M.D., *Seattle, Washington*
- 4:15 p.m. STEROID THERAPY IN THE PEDIATRIC AGE GROUP
Theodore C. Panos, M.D., *Little Rock, Arkansas*

Saturday Evening, May 4, 1963

CRYSTAL BALLROOM

Donald L. Brawner, M.D., Tulsa, Presiding

- 6:30 p.m. PRESIDENT'S INAUGURAL DINNER DANCE
Social Hour (Pompeian Court and Founders Room)
Dinner. Inaugural Ceremonies
Dancing to the Music of Leon McAuliff and His Orchestra

Sunday Morning, May 5, 1963

CRYSTAL BALLROOM

Howard A. Bennett, M.D., Tulsa, Presiding

- 9:00 a.m. THE POST-MYOCARDIAL INFARCTION SYNDROME
Charles E. Shopfner, M.D., *Oklahoma City*
9:20 a.m. THE USE OF VASO-DILATORS IN HYPOVOLEMIC SHOCK
J. T. MacDougall, M.D., *Winnipeg, Manitoba*
9:40 a.m. SOME OBSERVATIONS IN CIRCULATORY RESUSCITATION
James O. Elam, M.D., *Buffalo, New York*
10:10 a.m. Intermission

C. S. Lewis, Jr., M.D., Tulsa, Presiding

- 10:25 a.m. SYMPOSIUM: CARDIAC REHABILITATION
ACTIVE HABILITATION AND REHABILITATION OF THE CORONARY
PRONE SUBJECT AND KNOWN CORONARY PATIENT
Herman K. Hellerstein, M.D., *Cleveland, Ohio*
INDUSTRIAL MEDICAL ASPECTS
Camp S. Huntington, M.D., *Bartlesville*
LEGAL ASPECTS
John Couch, LL.B., *Oklahoma City*
INSURANCE ASPECTS
George Sawyer, Assistant Director for Medical Services, Liberty Mutual
Insurance Company, *Boston, Massachusetts*

EMERALD ROOM

Harlan Thomas, M.D., Tulsa, Presiding

- 9:00 a.m. THE MANAGEMENT OF SYPHILIS, WITH SPECIAL REFERENCE TO IN-
CREASED INCIDENCE
James L. Goddard, M.D., *Atlanta, Georgia*
9:20 a.m. PYELONEPHRITIS AND OBSTRUCTIVE UROPATHY
Theodore C. Panos, M.D., *Little Rock, Arkansas*
10:00 a.m. THE OBSTETRICIAN'S RESPONSIBILITY IN MENTAL RETARDATION
William J. McGanity, M.D., *Galveston, Texas*
10:30 a.m. Intermission

Wilkie D. Hoover, M.D., Tulsa, Presiding

- 10:45 a.m. THE HIRSUTE FEMALE
Robert B. Greenblatt, M.D., *Augusta, Georgia*
11:25 a.m. DIAGNOSIS AND TREATMENT OF GOUT AND GOUTY ARTHRITIS
L. Maxwell Lockie, M.D., *Buffalo, New York*
12:10 p.m. AUTO IMMUNITY AND DISEASE
Carl M. Pearson, M.D., *Los Angeles, California*

Technical Exhibitors

The Technical Exhibits of the 57th Annual Meeting of the Oklahoma State Medical Association will be located in the Main Lobby and on the 16th Floor of The Mayo adjacent to the Crystal Ballroom. Physicians are invited to visit the attractive, informative displays of the following firms:

Ayerst Laboratories	Mid-Continent Surgical Supply Company
Blue Cross-Blue Shield Plans of Oklahoma	Mid-West Surgical Supply Company
Coca-Cola Company	Mutual Benefit Life Insurance Company
Dictaphone Corporation	Murray Myers Company
C. L. Frates Company	Organon, Inc.
Fuller Pharmaceutical Company	Ortho Pharmaceutical Corporation
Geigy Pharmaceuticals	Parke, Davis & Company
General Electric X-Ray	Pfizer Laboratories
Great Books of the Western World	Professional Management Midwest
Jacuzzi Research, Inc.	R. J. Reynolds Tobacco Company
Kay Pharmacal Company	Roche Laboratories
Lanier Audograph Company	J. B. Roerig & Company
J. B. Lippincott Company	Sandoz Pharmaceuticals
Massachusetts Mutual Insurance Company	Sealy Southwest
J. A. Majors Company	G. D. Searle & Company
Mead Johnson & Company	E. R. Squibb & Sons
Medco Products, Inc.	St. Paul Insurance Company
Merck Sharp & Dohme	Stover Company
Merkel X-Ray Company	Warner-Chilcott Laboratories
William S. Merrel Company	Wyeth Laboratories

Related Meetings

American Academy of Pediatrics

The Oklahoma Chapter of the American Academy of Pediatrics will meet on Sunday, May 5, at 6:30 p.m. at Southern Hills Country Club. A social hour and dinner meeting will be followed by a special program featuring Doctor Theodore C. Panos, Chairman of the Department of Pediatrics, University of Arkansas School of Medicine, Little Rock, Arkansas, as guest speaker.

Oklahoma Society of Internal Medicine

The Oklahoma Society of Internal Medicine will meet at 6:30 p.m. on Thursday, May 2, for a dinner meeting at The Mayo.

Oklahoma State Radiological Society

Doctor Norman Simon will be guest speaker for the Oklahoma State Radiological Society on Sunday, May 5, at 3:00 p.m. in the Terrace Room of The Mayo. The meeting will conclude with a social hour and dinner.

International College of Surgeons

A breakfast meeting of the International College of Surgeons will be held in the French Room of The Mayo on Saturday, May 4, at 8:00 a.m. Doctor J. T. MacDougall of the Department of Surgery, University of Manitoba School of Medicine, Winnipeg, will be the guest speaker.

Oklahoma Society of Anesthesiology

The Oklahoma Society of Anesthesiology meets for lunch on Sunday, May 5, at 12:30 p.m. in the French Room of The Mayo. A scientific program will follow with Doctor James O. Elam, Associate Professor of Anesthesiology at the University of Buffalo School of Medicine, Buffalo, New York, as guest speaker.

Oklahoma State Urological Association

The Oklahoma State Urological Association will meet on Saturday, May 4, at the Grand Lake home of Doctor Berget H. Blockson. Guest speaker will be Doctor William W. Scott, Professor of Urology, Johns Hopkins School of Medicine, Baltimore, Maryland. Details will be announced later.

O.U. School of Medicine, Class of '55 Reunion

A reunion of members of the Class of 1955 of the University of Oklahoma School of Medicine will be held at a social hour and reception on Saturday, May 4, at 5:30 p.m. in the Metropolitan Room of The Mayo. Wives are invited to attend. Alumni will be guests of the Tulsa graduates.

PRESIDENT'S INAUGURAL DINNER-DANCE

SATURDAY, MAY 4, 1963



LEON McAULIFF

- 6:30 p.m. Social Hour and Reception. Pompeian Court and Founders Room, The Mayo.
- 7:30 p.m. Dinner and Inaugural Ceremonies, Crystal Ballroom, The Mayo.
- 9:00 p.m. Dancing to the Music of Leon McAuliff and His Orchestra, ABC Recording Artists and Television Personalities.

The social highlight of the 57th Annual Meeting of the Oklahoma State Medical Association will be the President's Inaugural Dinner-Dance on Saturday evening, May 4, 1963.

Following a social hour and reception a delicious prime rib of beef dinner will be served. The inauguration of the in-coming President of the Oklahoma State Medical Association will constitute the program, and dancing to the music of Leon McAuliff and His Orchestra will begin promptly at 9:00 p.m.

Leon McAuliff has gained a national reputation with his ABC and Columbia recordings, some of which have sold more than a million copies, and with his popular television and radio shows. In a career, which has included motion pictures, Leon's warm personality has won him hundreds of thousands of fans across the nation. His music is varied and danceable, ranging from sweet waltzes and old favorites to the modern latin rhythms and l'Twist, as the French say. Oklahoma doctors will be delighted with his toe-tapping melodies and specialty entertainers. Don't miss the inventive, danceable tunes of one of America's top dance bands.

TICKETS

Social hour, prime rib of beef dinner, inaugural ceremonies and program, and the Leon McAuliff dance—all for only \$7.50 per person! Attendance will be limited to 400 persons, the capacity of the Crystal Ballroom. Don't be disappointed by waiting too late, so send your advance order for tickets now to: Tulsa County Medical Society, B9 Medical Arts Building, Tulsa. Tickets will be sent by return mail. Important: make your check payable to "Oklahoma State Medical Association." Check must accompany all reservations.

House Of Delegates Meeting

10:00 A.M., MAY 3rd, POMPEIAN COURT, MAYO HOTEL

AGENDA *

OPENING SESSION

- I Call to Order
- II Invocation
- III Report of Credentials Committee
- IV Introduction of Guests
- V Remarks of Speaker
- VI Nomination of Officers
- VII Board of Trustees Report
- VIII Reports of Councils

- IX Introduction of Resolutions, Amendments to Constitution and By-Laws
- X Necrology Report

CLOSING SESSION

- I Call to Order
- II Reports of Reference Committees
- III Election of Officers
- IV Adjournment

*Condensed version, subject to modification

OFFICERS TO BE ELECTED

President (To be installed May 4th)

President-Elect

Delegate to the American Medical Association

Alternate Delegate to the American Medical Association

Trustees from Districts 2, 5, 8, 11, and 14

Oklahoma State Medical Association

1963 DELEGATES AND ALTERNATES

SOCIETY	DELEGATE	ALTERNATE
ALFALFA WOODS	Ed Calhoon, M.D., Beaver	Merle D. Carter, M.D., Waynoka
ATOKA BRYAN COAL	J. T. Colwick, Jr., M.D., Durant	Leroy L. Engles, M.D., Durant
BECKHAM	William M. Leebron, M.D., Elk City	L. V. Baker, Jr., M.D., Elk City
BLAINE	Claude H. Williams, M.D., Okeene	B. D. Dotter, M.D., Okeene
CADDO	A. C. Roberson, M.D., Anadarko	G. E. Haslam, M.D., Anadarko
CANADIAN	Alpha L. Johnson, M.D., El Reno	Jack P. Enos, M.D., Yukon
CARTER LOVE	Roger Reid, M.D., Ardmore	Kenneth L. Wright, Jr., M.D., Ardmore
MARSHALL	Frank W. Clark, M.D., Ardmore	John R. Adair, M.D., Ardmore
CHOCTAW PUSHMATAHA	H. D. Wolfe, M.D., Hugo	Bill E. Woodruff, M.D., Hugo
CLEVELAND McCLAIN	R. C. Mayfield, M.D., Norman	W. T. Stone, M.D., Purcell
	Roy W. Donaghe, M.D., Norman	W. L. Shead, M.D., Norman
	W. R. Patten, M.D., Norman	Y. E. Parkhurst, M.D., Norman
COMANCHE COTTON	W. A. Matthey, M.D., Lawton	James H. Bushart, M.D., Lawton
COOKSON HILLS	Robert L. Shore, M.D., Lawton	Melton P. Meek, M.D., Lawton
CRAIG DELAWARE OTTAWA	Bryce O. Bliss, M.D., Tahlequah	(not reported)
	David Carson, M.D., Miami	James M. McMillan, M.D., Vinita
CREEK	Robert G. White, Jr., M.D., Sapulpa	M. S. Bartlett, M.D., Sapulpa
CUSTER	E. R. Flock, M.D., Weatherford	Curtis B. Cunningham, M.D., Clinton
EAST CENTRAL	Port Johnson, M.D., Muskogee	Albert H. Krause, M.D., Muskogee
(Muskogee, Wagoner and McIntosh)	David F. Watson, M.D., Muskogee	Marvin Elkins, M.D., Muskogee
	E. L. Leonard, M.D., Wagoner	Joseph M. James, M.D., Muskogee
GARFIELD KINGFISHER	Mark D. Holcomb, M.D., Enid	Hugh H. Mathews, M.D., Enid
	Lillian H. Robinson, M.D., Enid	Joseph W. Stafford, M.D., Enid
	Paul H. Rempel, M.D., Enid	William H. Simon, M.D., Enid
GARVIN	John M. Moore, M.D., Pauls Valley	John A. Graham, M.D., Pauls Valley
GRADY	B. C. Chatman, M.D., Chickasha	Rossler H. Henton, M.D., Rush Springs
GRANT	F. P. Robinson, M.D., Pond Creek	Robert W. Choice, M.D., Wakita
GREER	Fred W. Sellers, M.D., Mangum	Dwight D. Pierson, M.D., Mangum
HUGHES SEMINOLE	L. A. S. Johnston, M.D., Holdenville	H. V. Schaff, M.D., Holdenville
JACKSON	C. L. Tefertiller, M.D., Altus	Wayne A. Starkey, M.D., Altus
JEFFERSON	Harold Stout, M.D., Waurika	Lee Pullen, M.D., Waurika
KAY	Harold H. Jones, M.D., Ponca City	P. A. MacKercher, M.D., Ponca City
NOBLE	E. Edwin Fair, M.D., Ponca City	Jack O. Alexander, M.D., Ponca City
	C. H. Cooke, M.D., Perry	Bill J. Simon, M.D., Perry
KIOWA WASHITA	S. Tisdall Jones, M.D., Cordell	J. B. Tolbert, M.D., Mountain View
LeFLORE HASKELL	Charles S. Cunningham, M.D., Poteau	Robert W. Lowrey, M.D., Poteau
LINCOLN	Michael Burleson, M.D., Prague	William I. Jones, M.D., Stroud
LOGAN	Louis H. Ritzhaupt, M.D., Guthrie	J. S. Petty, M.D., Guthrie
McCURTAIN	Robert L. Loftin, M.D., Broken Bow	(not reported)
MURRAY	R. W. Morton, M.D., Sulphur	(not reported)
NORTHWESTERN	R. G. Obermiller, M.D., Woodward	William F. Hudson, M.D., Buffalo
(Beaver, Dewey, Ellis, Harper and Woodward)	Richard H. Burgtorf, M.D., Shattuck	M. H. Newman, M.D., Shattuck

**OKFUSKEE
OKLAHOMA**

L. J. Spickard, M.D., Okemah
 *David R. Brown, M.D.
 Arthur F. Elliott, M.D.
 Cecil R. Stansberry, M.D.
 Elwood Herndon, M.D.
 John A. Blaschke, M.D.
 Lloyd A. Owens, M.D.
 Lewis C. Taylor, M.D.
 Charles E. Delhotal, M.D.
 Charles H. Wilson, M.D.
 Galen P. Robbins, M.D.
 James R. Riggall, M.D.
 Ethan A. Walker, Jr., M.D.
 R. Q. Goodwin, M.D.
 C. Alton Brown, M.D.
 Carl G. Coin, M.D.
 Earl M. Bricker, M.D.
 F. H. McGregor, M.D.
 Ralph C. Denny, M.D.
 Vernon D. Cushing, M.D.
 Rex E. Kenyon, M.D.
 C. B. Dawson, M.D.
 James B. Pitts, Jr., M.D.

*All Oklahoma City residents

Carlton E. Smith, M.D., Henryetta
 Rex W. Daugherty, M.D.
 Powell E. Fry, M.D., Stillwater
 Edward M. Thorp, M.D., Cushing
 F. T. Bartheld, M.D., McAlester
 Ollie McBride, M.D., Ada
 David Ramsay, M.D., Ada
 Leon D. Combs, M.D., Shawnee
 W. A. Howard, M.D., Chelsea

**OKMULGEE
OSAGE
PAYNE
PAWNEE
PITTSBURG
PONTOTOC**

**POTTAWATOMIE
ROGERS**

**MAYES
STEPHENS
TEXAS
CIMARRON
TILLMAN
TULSA**

John D. Jennings, M.D., Duncan
 E. L. Buford, M.D., Guymon

Jack D. Honaker, M.D., Frederick
 *Joe E. Tyler, M.D.
 Homer D. Hardy, Jr., M.D.
 Howard A. Bennett, M.D.
 Samuel R. Turner, M.D.
 N. C. Gaddis, M.D.
 Frank L. Flack, M.D.
 Vincel Sundgren, M.D.
 Ben F. Gorrell, M.D.
 Rayburne W. Goen, M.D.
 Worth M. Gross, M.D.
 C. S. Lewis, Jr., M.D.
 Harlan Thomas, M.D.
 L. A. Munding, M.D.
 Craig S. Jones, M.D.
 James W. Kelley, M.D.

*All Tulsa residents unless indicated otherwise

Elvin M. Amen, M.D., Bartlesville
 Lynn C. Barnes, Jr., M.D., Nowata
 Ira Clair Liebrand, M.D., Bartlesville

(not reported)

*G. Rainey Williams, M.D.
 Martin H. Andrews, M.D.
 Charles M. Harvey, M.D.
 Charles N. Atkins, M.D.
 John F. Montroy, M.D.
 William R. Cleaver, M.D.
 George R. Randels, M.D.
 Jack G. Glasgow, M.D.
 Leonard R. Diehl, M.D.
 Jay T. Shurley, M.D.
 Charles W. Cathey, M.D.
 M. T. Buxton, M.D.
 H. C. Moody, M.D.
 Haven W. Mankin, M.D.
 Robert E. Campbell, M.D.
 J. N. Lysaught, M.D.
 Kenneth G. Ogg, M.D.
 N. F. V. Barkett, M.D.
 Lucien C. Kavan, M.D.
 A. C. Lisle, Jr., M.D.
 Irwin H. Brown, M.D.
 Sanford Matthews, M.D.

Cleve Beller, M.D., Okmulgee
 William A. Geiger, M.D., Fairfax
 Haskell Smith, M.D., Stillwater
 George R. Smith, M.D., Cushing
 E. D. Greenberger, M.D., McAlester
 E. D. Padberg, M.D., Ada
 Clarence P. Taylor, M.D., Ada
 John R. Hayes, M.D., Shawnee
 Jerry L. Puls, M.D., Pryor

C. N. Talley, M.D., Marlow
 (not reported)

Roger G. Johnson, M.D., Frederick
 *William M. Benzing, Jr., M.D.
 Maxwell A. Johnson, M.D.
 Dixon N. Burns, M.D.
 Robert G. Perryman, M.D.
 Myra A. Peters, M.D.
 Iron H. Nelson, M.D.
 Robert Ray Rupp, M.D., Sand Springs
 R. E. Daily, M.D., Bixby
 Curtis N. Clifton, M.D.
 Robert A. Northrup, M.D.
 James H. Neal, Jr., M.D.
 Charles E. Wilbanks, M.D.
 Richard E. McDowell, M.D.
 Donald L. Brawner, M.D.
 William B. Scimeca, M.D.

John Scott, M.D., Bartlesville
 John R. Reid, M.D., Nowata
 H. E. Denyer, M.D., Bartlesville

**WASHINGTON
NOWATA**

HOUSE OF DELEGATES: BUSINESS AFFAIRS

The following resolutions are brought to the attention of county medical societies. The items reported here represent those received in time for publication in advance of the meeting. Reports and proposals received subsequently will be reproduced and inserted in the portfolios now being prepared for each county society delegate.

**Subject: OSMA Support for OMPAC
and AMPAC Resolution 1**
Submitted by: Comanche-Cotton County Medical Society

WHEREAS, in view of the ever increasing political pressures on the part of our governments, both federal and state, directed toward establishing progressively more central control and limitations of free enterprise (and in particular, American Medicine), be it

RESOLVED, that the Oklahoma State Medical Association does hereby endorse and approve the Oklahoma Medical Political Action Committee and its purposes. And be it further

RESOLVED, that the Oklahoma State Medical Association does hereby endorse and approve the American Medical Political Action Committee and urge all physicians of this state to join, support, and contribute to the success of AMPAC and its objectives; and

BE IT FURTHER RESOLVED, that the Oklahoma State Medical Association does hereby urge all of its members to actively participate and contribute to these organizations in order to promote the political aims and objectives of the physicians of this state for the greater benefit of medicine and the betterment of the public health of all its citizens.

**Subject: Mental Health in the State
of Oklahoma Resolution 2**
Submitted by: Tri-County Medical Society

WHEREAS, it is well recognized:

(1) That problems in Mental Health embrace conditions ranging from behavior problems in children through alcoholism, the psychoses, and the senile dementiae of the aged.

(2) That the problems in Mental Health are common to the vast majority of all communities.

(3) That problems in Mental Health arise in large segments of the population of the State of Oklahoma.

(4) That many problems in Mental Health can be prevented, alleviated or treated by attention at community level, and

WHEREAS, the members of the Tri-County Medical Society, as members of the medical profession recognize these problems to be of tantamount public importance; and

THEREFORE, BE IT RESOLVED, That the Tri-County Medical Society at this regular monthly meeting go on record and urge the House of Delegates of the Oklahoma State Medical Association to go on record, approve and offer their full and unqualified support of a Mental Health Survey to be conducted by the Department of Health of the State of Oklahoma during 1963 to 1965.

**Subject: Compensation of Interns
and Residents Resolution 3**
Submitted by: Pottawatomie County Medical Society

WHEREAS, The members of the House of Delegates of the American Medical Association have before them a special report submitted by the Council on Medical Education and Hospitals and the Council on Medical Service dealing with the subject "Compensation of Interns and Residents"; and

WHEREAS, One of the features of that report is a suggestion that hospital attending staff members legally associate, for the purpose of employing and compensating house officers, for the services rendered to hospital patients; and

WHEREAS, Such action would inescapably invite hospitals to participate further in the corporate practice of medicine; and

WHEREAS, The report further suggests that patients who have purchased private voluntary medical-surgical insurance coverage should be cared for by house officers compensated by means of that coverage, de-

spite the fact that most holders of such coverage have bought it so that they may enjoy the services of the private physicians of their choice; and

WHEREAS, These suggestions disregard the accepted principles that hospitals and not the members of their attending staffs, are responsible for the employment and compensation of hospital house officers; and

WHEREAS, Internship and residency is the continuation of education in which a person is prepared to advance his status in life; and

WHEREAS, The marked increase of salaries for a resident will cause more doctors to specialize while the need in medicine today is for more family doctors, and

WHEREAS, The responsibility for meeting one's expenses while in training is a personal matter and should not be considered a collective problem; and

WHEREAS, If the American Medical Association will leave such matters to the individual and hospitals, the demand and supply (Free Enterprise) will solve the problem; now therefore be it

RESOLVED, That the Oklahoma State Medical Association reaffirm and re-emphasize its recognition of the principle that it is the responsibility and duty of attending staff members to teach, guide, and counsel the house officers, but not, however, to the extent of compensating those house officers for submitting to such teaching, guidance and counseling; and be it further

RESOLVED, That the Oklahoma State Medical Association reaffirm its recognition of the historical fact that it is the responsibility of hospitals to employ and properly compensate their house officers for services rendered; and be it further

RESOLVED, That a similar resolution be presented to the House of Delegates of the American Medical Association in June, 1963.

**Subject: Blue Shield Indemnity
Contract**

Resolution 4

Submitted by: Pottawatomie County Medical Society

WHEREAS, the new National Blue Shield plan for the aged as proposed by the Ameri-

can Medical Association is a service plan insurance program; and

WHEREAS, service plan insurance injects a third party for the purpose of limiting, lowering and stereotyping medical professional fees, and

WHEREAS, the doctor's fees are the economic responsibilities of the physician and his patient,

THEREFORE BE IT RESOLVED, that the Oklahoma State Medical Association does not approve the new National Blue Shield Service Contract for the aged and encourages its members not to participate in the program; and

BE IT FURTHER RESOLVED, that we recommend instead, an indemnity type contract be worked out; and

BE IT FURTHER RESOLVED, that a similar resolution be presented to the House of Delegates of the American Medical Association in June, 1963.

Subject: AMPAC and OMPAC

Resolution 5

Submitted by: Pottawatomie County Medical Society

WHEREAS, the objectives of the American Medical Political Action Committee are commendable by assisting physicians and others to organize for more effective political action and in carrying out civic responsibilities, by encouraging physicians to understand the true nature of their government as to important political issues and as to the records of office holders and candidates for elective office, and by stimulating doctors and others to take a more active and effective part in governmental affairs, including the election of desirable candidates to office; and

WHEREAS, the objectives of the Oklahoma Medical Political Action Committee are similarly commendable in their application at the local level.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association officially recognize and endorse the American Medical Political Action Committee and its component, the Oklahoma Medical Political Action Committee for their commendable programs of activities; and

further that the Oklahoma State Medical Association recommend to its members that they become active dues-paying members of AMPAC and OMPAC, and

BE IT FURTHER RESOLVED, that the Oklahoma State Medical Association give the same type of financial support to OMPAC as the AMA gives to AMPAC, providing there is no conflict with a state law.

Subject: Relative Value Schedules Resolution 6
Submitted by: Pottawatomie County Medical Society

WHEREAS, the development of a relative value scale of fee schedules has been urged upon us and our profession, primarily by "third parties," interested neither in our profession nor our privileged relationship with our patients, but instead to satisfy their own needs and in so doing undermine the right of each individual physician to deal directly with his patient for the service to be rendered and the fee to be charged; and

WHEREAS, the development of a relative value scale of fee schedules would allow persons outside our profession to use these schedules for the purpose of bargaining, fee setting, and "total coverage" programs, and would allow these persons to use this schedule to attempt to control and "hold down" medical charges, disregarding completely that many times no fees are charged for services rendered, and that in any instance in which suitable adjustments to such programs have been attempted, the physicians and the medical profession are regarded as the sinner and "gouger," in spite of the known fact that physician's fees have not increased in proportion to the rising cost of living; and

WHEREAS, the development of such a program of relative value scale is one more attempt to enlist the physician in a program of compromise and surrender which, if allowed to continue, can only lead to the ultimate adoption of government control of such a schedule, and along with it the entire medical profession; and

WHEREAS, the development of such a program is impossible, since it cannot of necessity take into consideration the obvious

non-standardization of the multiplicity of procedures in the practice of medicine, when performed by more than one physician, and cannot take into consideration that no two patients can be placed on a scale and standardized, and cannot stereotype any given medical case with regards to risk, pathology, care and time involved, training of the individual physician, and many other nebulous factors that are so inherent in the time-honored doctor-patient relationship.

THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association considers that the only proper and satisfactory fee arrangement in a free enterprise society is that reached by private contract between individual patient and physician, and that the activities by "third parties" in the medical care field should be limited to developing contracts between themselves and potential patients; further be it

RESOLVED, that the Oklahoma State Medical Association present a similar resolution to the House of Delegates of the American Medical Association in June, 1963.

Subject: Areawide Planning for Resolution 7
Hospitals
Submitted by: Pottawatomie County Medical Society

WHEREAS, The report of the joint committee of the American Hospital Association and the U.S. Public Health Service on Area-wide Planning for Hospitals and Related Health Service is suggesting that there be planning agencies for each region of the United States is a new philosophy on future hospital building, and

WHEREAS, This philosophy is not what it appears to be on the surface, but rather through duly processed legislation would decree that only super-hospitals would be built in the future, to the exclusion of the small rural and community type hospitals at some distance from the patient's local community, and

WHEREAS, This will cause increasing dominance of the hospital building program by the State Public Health Department and the Federal Government through altered Hill-Burton approach, and

WHEREAS, Areawide Planning has been legislated into being in Illinois and New York; therefore be it

RESOLVED, that the Oklahoma State Medical Association go on record as against Areawide Planning as now being promoted by American Hospital Association and U.S. Public Health Service; and further be it

RESOLVED, that a similar resolution be presented to the American Medical Association at its annual meeting in June, 1963; and be it

RESOLVED, that the Oklahoma State Medical Association study the Areawide Planning Program for Hospitals in its appropriate committees with the following objectives in mind:

1. To limit each such area to regions within the state as is commensurate with the problem involved.

2. To alert the county societies to fight enabling legislation which would convert this from a voluntary to a compulsory system.

3. To see that professional representatives (other than HEW and State Health Department personnel) be had on each such agency. Representation to be professional in all aspects but especially to include representatives of organized medicine dedicated to the preservation of free enterprise.

4. To inform the American Hospital Association and the Catholic Hospital Association that organized medicine regards compulsory Areawide Planning in some of its facets as an encroachment upon the private practice of medicine in hospitals.

5. To point out that the patient has a right to receive adequate medical and hospital care in his own community and not be compelled to travel a considerable distance from his home for the doubtful benefits of a larger hospital plant.

Subject: Mental and Public Health Resolution 8
Submitted by: Pottawatomie County Medical Society

WHEREAS, the Administrative branch of our Federal Government with the support of the American Medical Association and the AFL-CIO has proposed Federal Public Health financed construction and staffing of com-

munity mental health centers throughout the nation.

WHEREAS, these centers will become the equal financial responsibility of federal, state and community taxpayers, each source eventually contributing a billion dollars to the program, thereby enlarging the one and one-fourth trillion dollar mortgage on future generations through an already fantastic method of deficit spending for politically defined and oriented current "needs" of our citizens.

WHEREAS, the need for such a program has not been established and the definition of the state of mental illness has not been established even among psychiatrists and certainly not through politically motivated federal laity who historically have successfully detracted from the excellence, economy and magnitude of local care by substituting medicare.

WHEREAS, the Federal Administration and the AMA recognize a shortage of trained psychiatrists for existing mental health facilities and have proposed the use of psychologists and social workers to staff community mental health centers—a manifest and serious danger to the existing status of our national mental health.

WHEREAS, the training and ability of all members of the medical profession presently caring for the mental health needs of our people are surely superior to that of non-medical federally trained mental therapists, and as proposed, housewives.

WHEREAS, the plan for community mental health programs proposes State and Federal Public Health supervision and operation with some twelve such centers already functioning under the Oklahoma State Department of Public Health. Recent federal plans propose the use of Domestic Peace Corps personnel in such facilities.

THEREFORE, BE IT RESOLVED, that the Pottawatomie County Medical Society continue to support the best possible training of more psychiatrists and optimum use and needed expansion of existing medically administrated and supervised community mental health facilities for those persons

with a medically established mental health need and go on record as opposing these present mental health proposals of the AFL-CIO, and our Federal Administration and the American Medical Association.

BE IT FURTHER RESOLVED, that Public Health activities be confined to mass preventative programs and not be extended into the fields of diagnosis and therapy.

BE IT FURTHER RESOLVED, that this resolution become the policy of the Oklahoma State Medical Association.

BE IT FURTHER RESOLVED, that these recommendations be made known by every member of said Association to their associates and representatives in their state and federal governments.

BE IT FURTHER RESOLVED, that a similar resolution be presented to the American Medical Association in June, 1963.

Subject: Liberty Amendment **Resolution 9**
Submitted by: Pottawatomie County Medical Society

WHEREAS, the states of Wyoming, Texas, Nevada, Louisiana, Georgia and South Carolina have formally adopted the Liberty Amendments; and

WHEREAS, the four sections of the Amendment state:

Section 1. The government of the United States shall not engage in any business, professional, commercial, financial or industrial enterprises except as specified in the Constitution.

Section 2. The Constitution or law of any state, or the laws of the United States shall not be subject to the terms of any foreign or domestic agreement which would abrogate this Amendment.

Section 3. The activities of the United States Government which violate the intent and purpose of this Amendment shall, within a period of three years from the date of the ratification of this Amendment, be liquidated and the properties and facilities affected shall be sold.

Section 4. Three years after the ratification of this Amendment the sixteenth Article of Amendments to the Constitution of the United States shall stand repealed and

thereafter Congress shall not levy taxes on personal incomes, estates, and/or gifts; therefore be it

RESOLVED, That the Oklahoma State Medical Association go on record in support of the Liberty Amendment; and be it further

RESOLVED, That a similar resolution be presented to the House of Delegates of the American Medical Association in June, 1963.

Subject: Statement of Principle **Resolution 10**
Submitted by: Pottawatomie County Medical Society

WHEREAS, American physicians directly serve their patients, the citizens of the United States, and are responsible to these patients; and

WHEREAS, American physicians have voluntarily assumed a responsibility to provide guidance to the public in matters of preventative medicine and health care; and

WHEREAS, This has led to assumption of a corollary obligation to publicly express opinion on programs which do or can affect the physician's capability to practice medicine in the best interests of his patients; and

WHEREAS, Patients and the public have the right to know the principles under which the physicians practice and are willing to continue to practice; therefore be it

RESOLVED, That the House of Delegates of the Oklahoma State Medical Association endorses and affirms the following:

STATEMENT OF PRINCIPLE

As a physician, I will continue to render to all of my patients the highest quality of medical care of which I am capable, and I will assist my colleagues to do likewise.

I will undertake to diagnose and treat patients only under conditions which allow me to practice to the best of my ability and which do not cause, or tend to cause, a deterioration in the extent or quality of care I am able to render.

I believe that Americans will remain free only so long as our government does not abridge the rights and responsibilities of individual citizens; I believe that rights and responsibilities are inseparable.

I believe that Americans who are able to

care for themselves should not be made wards of government for the purpose of obtaining medical care, hospitalization, food, clothing, or for any other purposes.

I believe that such governmental programs would subtract from the liberty of each American and that individual freedom is the purpose for which Americans instituted independent government on this continent.

I believe that acceptance of payment from plans that curtail the individual's right to select health care and the individual's responsibility for such care would not be consistent with my beliefs in freedom and the best practice of medicine.

My purpose in signing this statement is to add my voice to a plea to retain maximum freedom in the United States and to contribute to the further advancement of the care physicians are able to provide patients in this country; and be it further

RESOLVED, That the House of Delegates of the Oklahoma State Medical Association directs that duplicate copies of this statement be forwarded to each member of the Oklahoma State Medical Association, and that each physician who voluntarily signs this statement be requested to place one copy on file with the Association's Executive Secretary; and be it further

RESOLVED, that a similar resolution be presented to the House of Delegates of the American Medical Association in June, 1963.

**Subject: Payment of Physicians for
Crippled Children's Services Resolution 11
Submitted by: Pittsburgh County Medical Society**

WHEREAS, the Oklahoma State Medical Association has long maintained a position of opposition to physicians in Oklahoma accepting pay from public sources for the care of children in hospitals admitted under the Crippled Children's Act; and

WHEREAS, this policy was originally established when funds to support the care of crippled children were obtained to a great extent by charitable contributions in contrast to being almost completely supported by tax monies at this time; and

WHEREAS, the times and thinking of the

members of the Oklahoma State Medical Association have changed with the years in that doctors now accept pay for the care of patients hospitalized by the Department of Public Welfare in a number of categories, particularly those of Old Age Assistance, Aid to Dependent Children, and others; and

WHEREAS, in fact there are now relatively few doctors in the State of Oklahoma who do not accept pay for hospitalized patients under the Welfare Program, except those doctors treating only children, who are prohibited by law from being so paid; and

WHEREAS, doctors now accept pay for office calls on children who are wards of the Child Welfare Department as well as wards of the State Welfare Department who are maintained outside the homes under Foster Care, but once these same children enter a hospital door, no pay is allowed for medical care,

BE IT RESOLVED THAT:

1. The Oklahoma State Medical Association go on record as being not opposed to accepting pay for hospitalization of patients under the Crippled Children's Act.

2. The Public Welfare Committee of the Oklahoma State Medical Association be instructed to enter into negotiations with the Department of Public Welfare to determine manner and terms under which payment can be made and what legislative changes in the provisions of the Crippled Children's Act will be necessary to accomplish its purpose.

3. The Committee report its findings and recommendations to the next called meeting of the Board of Trustees for action.

**Subject: Participation of the American
Medical Association As Observ-
ers in World Health Organiza-
tion Meetings Resolution 12
Submitted by: OSMA Resolutions Committee**

WHEREAS, The World Health Organization, having been formed under the United Nations, is now engaged in an extensive program to eliminate the causes of disease and improve world health; and

WHEREAS, The American Medical Association should observe the progress and ac-

tivities of this organization as part of its responsibility to the physicians and the people of the United States; and

WHEREAS, The American Medical Association can contribute direction to the World Health Organization through its role as an observer; and

WHEREAS, The avenue for such participation and cooperation already exists through the National Citizens Committee for WHO;

NOW THEREFORE, BE IT RESOLVED, That the Oklahoma State Medical Association formally request the House of Delegates of the American Medical Association to authorize participation of the AMA in the World Health Organization by attendance at, and through membership in the National Citizens Committee for WHO.

Subject: Amending the Medical Practice Act to Permit Foreign Medical Graduates to Serve as Residents in Recognized Teaching Hospitals of Oklahoma Resolution 13
Introduced by: Tulsa County Medical Society

WHEREAS, There is a nationwide shortage in the number of American Medical graduates to fill available residency positions in the teaching hospitals of Oklahoma, as of all other states; and

WHEREAS, in the vast majority of states, foreign-born and trained medical graduates are accepted as residents; and

WHEREAS, adequate procedures exist for the screening of foreign medical graduates through the examinations in English and Medicine by the Educational Council for Foreign Medical Graduates; and

WHEREAS, The present Medical Practice Act of Oklahoma does not permit the acceptance of foreign medical graduates as residents; and

WHEREAS, The teaching hospitals of the State of Oklahoma and their patients are deprived of the services of many qualified residents, and the State of Oklahoma is deprived of its share to contribute to the improvement of medical knowledge abroad,

NOW THEREFORE BE IT RESOLVED, That the Oklahoma State Medical Association take appropriate action to propose and

initiate a change in or amendment to the Medical Practice Act of Oklahoma, to permit foreign medical graduates to serve as residents in the recognized teaching hospitals in Oklahoma; and

BE IT FURTHER RESOLVED, That in order to execute such change or amendment, it is proposed that (a) either residents in recognized teaching hospitals be exempted from any license requirements, or (b) that such residents be given a temporary license or permit, not based on citizenship, valid only for the duration of the residency, to be renewed annually, but not beyond a period of four (4) years; and

BE IT FURTHER RESOLVED, That the screening examination of the Educational Council for Foreign Medical Graduates, as endorsed by the American Medical Association, is recognized and made legally the basis for admitting any foreign medical graduates as either internes or residents.

Subject: Air Pollution Control Resolution 14
Introduced by: Tulsa County Medical Society

WHEREAS, It is agreed that the best medicine practiced is preventive medicine; and

WHEREAS, It is a matter of record that efforts are being made both publicly and privately to attract more industry into the State of Oklahoma; and

WHEREAS, The history of the difficulty of the solution of the problems of water pollution are well known; and

WHEREAS, The difficulty of solving a major air pollution problem after it occurs, is well known; and

WHEREAS, These problems have, in cities all over the world, caused illness and death and discouraged population growth and industrial development; and

WHEREAS, Specific instances of air contamination have already occurred in Oklahoma,

NOW THEREFORE, BE IT RESOLVED, That the Oklahoma State Medical Association endorse the need for appropriate legislation directed at the prevention and control of air pollution. This body recommends such

action to His Honor, Governor Henry Bellmon, and the Legislature of the State of Oklahoma.

**Subject: OSMA Endorsement of AMPAC
and OMPAC Resolution 15**
Introduced by: Tulsa County Medical Society

WHEREAS, American Medicine is again faced with the administration's Medicare Bill, a sure step toward socialized medicine; and

WHEREAS, Federal Spending has reached such gigantic proportions as to be almost incomprehensible; and

WHEREAS, There seems to be no end to Federal intervention with further deterioration of the free enterprise system; and

WHEREAS, The Oklahoma Medical Political Action Committee (OMPAC) was formed in 1962 as a subsidiary of the American Medical Political Action Committee (AMPAC) specifically to encourage political activity by physicians and their friends in an effort to combat further encroachment on individual freedoms,

NOW THEREFORE, BE IT RESOLVED, That the Oklahoma State Medical Association does hereby endorse and approve the Oklahoma Medical Political Action Committee and its purposes; and

BE IT FURTHER RESOLVED, That the Oklahoma State Medical Association does hereby endorse and approve the American Medical Political Action Committee and urge all physicians of this state to join, support and contribute to the success of AMPAC and its objectives; and

BE IT FURTHER RESOLVED, That the Oklahoma State Medical Association does hereby urge all of its members to actively participate and contribute to these organizations in order to promote the political aims and objectives of the physicians of this State for the greater benefit of medicine and the betterment of the public health of all its citizens.

**Subject: Free Choice of Physicians
in Workmen's Compensation Cases Resolution 16**
Introduced by: Tulsa County Medical Society

WHEREAS, The present Workmen's Compensation statute of Oklahoma does not provide the injured employee any voice in the selection of the treating physician; and

WHEREAS, the principle of free choice of physician is inherent in the medical profession and inherent to the doctor-patient relationship,

NOW THEREFORE BE IT RESOLVED, That the Oklahoma State Medical Association through its recognized committees seek to change the first sentence of Title 85, Section 14 of the 1961 Oklahoma Statute on Workmen's Compensation to read "the employer shall promptly provide for an injured employee such medical and surgical or other attendance, or trained nurse, and hospital services, medicine, crutches and apparatus as may be necessary and mutually agreeable to the employer and the employee during 60 days after the injury or for such time in excess thereof as in the judgment of the Commission may be required."

Subject: Immunization Education Program Resolution 17
Introduced by: Tulsa County Medical Society

WHEREAS, The House of Delegates has previously adopted, for good and sufficient reason, a resolution instructing the Oklahoma State Medical Association to develop an effective program of public education concerning immunization available against preventable illnesses and diseases, in cooperation with all other interested parties, specifically the Oklahoma State Department of Public Health; and

WHEREAS, The need for this program continues to be apparent despite widespread campaigns through local medical societies, principally directed against poliomyelitis,

NOW THEREFORE, BE IT RESOLVED, That the Oklahoma State Medical Association, through appropriate councils and committees, be instructed to enlarge and intensify its continuing public education cam-

paigns against preventable illness, and to initiate new and continuing programs in cooperation with any reputable agency or private concern offering assistance and cooperation; and

BE IT FURTHER RESOLVED, That the Oklahoma State Medical Association sponsor appropriate legislation in the Oklahoma State Legislature, to provide funds for the administration of an adequate immunization education program; and

BE IT FURTHER RESOLVED, That the program be developed and administered in keeping with the principle that immunization shall be the individual financial responsibility of the citizen, and that arrangements shall be made on a sliding fee basis for the care of the indigent.

Subject: Immunizations by Public
Health Departments Resolution 18
Introduced by: Tulsa County Medical Society

WHEREAS, The interpretation of the Attorney-General of the State of Oklahoma of the law setting up the Oklahoma State Department of Public Health, is that its services are available to all citizens regardless of ability to pay; and

WHEREAS, The Oklahoma State Department of Public Health in an appropriate function, sponsors clinics for immunization against preventable illnesses, regardless of ability of recipients to pay; and

WHEREAS, It represents an unnecessary expense to the taxpayers to pay for immunizations of individuals with means, where this is locally available through non-public sources,

NOW THEREFORE, BE IT RESOLVED, That the Oklahoma State Medical Association through appropriate council or committee, sponsor legislation in the Oklahoma State Legislature, allowing the Oklahoma State Department of Public Health to use guide lines adopted by the Oklahoma State Department of Public Welfare, in providing services for individuals where this is consistent with available community resources and maintenance of proper protection of the public health; and

BE IT FURTHER RESOLVED, That the Oklahoma State Medical Association, through appropriate executive action, request the Oklahoma State Department of Public Health to avoid duplication of facilities for immunizations, when the local ability to provide this service is available.

Subject: Oklahoma Mental Health
Program Resolution 19
Submitted by: Craig, Delaware, Ottawa County Medical Society

WHEREAS, It has come to the attention of the Craig, Delaware, Ottawa County Medical Society that great damage is being done to the mental health program in the State of Oklahoma, in general, and in this area, in particular, because of the adverse publicity to the program with resultant loss of morale to the employees and officials of the Eastern State Hospital in Vinita, Oklahoma; and

WHEREAS, We feel that a positive approach for remedial action should be undertaken so that the confidence of the general public will be restored in the overall program;

THEREFORE, BE IT RESOLVED,

1. We oppose the abolishment of the Mental Health Board in Oklahoma, as we feel that it is not only desirable but necessary.

2. We are opposed to placing the Mental Health Board and the administration of all State Hospitals in particular under any other agency that exists under present state laws.

3. It is our considered opinion that the Superintendents of State Mental Hospitals should be qualified psychiatrists, which is the policy at the present time.

4. We regret that political interference of any kind or character should be involved in the administration of any state hospital, as the diagnosis and treatment of the human mind is such a vital matter that the obligation should not be left in the hands of anyone not qualified to properly discharge the responsibility of restoring deserving citizens to mental health so they might lead normal, useful lives. Further, we feel that continued interference will make it increasingly difficult to obtain the services of qualified and outstanding psychiatrists in Oklahoma.

Subject: Payment of Physicians for
Crippled Children's Services Resolution 20
Submitted by: Choctaw-Pushmataha County Medical
Society

WHEREAS, the Oklahoma State Medical Association has long maintained a position of opposition to physicians in Oklahoma accepting pay from public sources for the care of children in hospitals admitted under the Crippled Children's Act; and

WHEREAS, this policy was originally established when funds to support the care of crippled children were obtained to a great extent by charitable contributions in contrast to being almost completely supported by tax monies at this time; and

WHEREAS, the times and thinking of the members of the Oklahoma State Medical Association have changed with the years in that doctors now accept pay for the care of patients hospitalized by the Department of Public Welfare in a number of categories, particularly those of Old Age Assistance, Aid to Dependent Children, and others; and

WHEREAS, in fact there are now relatively few doctors in the State of Oklahoma who do not accept pay for hospitalized patients under the Welfare Program, except those doctors treating only children, who are prohibited by law from being so paid; and

WHEREAS, doctors now accept pay for office calls on children who are wards of the Child Welfare Department as well as wards of the State Welfare Department who are maintained outside the homes under Foster Care, but once these same children enter a hospital door, no pay is allowed for medical care,

BE IT RESOLVED THAT,

1. The Oklahoma State Medical Association go on record as being not opposed to accepting pay for hospitalization of patients under the Crippled Children's Act.

2. The Public Welfare Committee of the Oklahoma State Medical Association be instructed to enter into negotiations with the Department of Public Welfare to determine the manner and terms under which payment can be made and what legislative changes in the provisions of the Crippled Children's Act

will be necessary to accomplish its purpose.

3. The Committee report its findings and recommendations to the next called meeting of the Board of Trustees for action.

Subject: Payment of Physicians for
Crippled Children's Services Resolution 21
Submitted by: Garfield-Kingfisher County Medical So-
ciety

WHEREAS, the Oklahoma State Medical Association has long maintained a position of opposition to physicians in Oklahoma accepting pay from public sources for the care of children in hospitals admitted under the Crippled Children's Act; and

WHEREAS, this policy was originally established when funds to support the care of crippled children were obtained to a great extent by charitable contributions in contrast to being almost completely supported by tax monies at this time; and

WHEREAS, the times and thinking of the members of the Oklahoma State Medical Association have changed with the years in that doctors now accept pay for the care of patients hospitalized by the Department of Public Welfare in a number of categories, particularly those of Old Age Assistance, Aid to Dependent Children, and others; and

WHEREAS, in fact there are now relatively few doctors in the State of Oklahoma who do not accept pay for hospitalized patients under the Welfare Program, except those doctors treating only children, who are prohibited by law from being so paid; and

WHEREAS, doctors now accept pay for office calls on children who are wards of the Child Welfare Department as well as wards of the State Welfare Department who are maintained outside the homes under Foster Care, but once those same children enter a hospital door, no pay is allowed for medical care,

BE IT RESOLVED THAT,

1. The Oklahoma State Medical Association go on record as being not opposed to accepting pay for hospitalization of patients under the Crippled Children's Act.

2. The Public Welfare Committee of the Oklahoma State Medical Association be in-

structed to enter into negotiations with the Department of Public Welfare to determine the manner and terms under which payment can be made and what legislative changes in the provisions of the Crippled Children's Act will be necessary to accomplish its purpose.

3. The Committee report its findings and recommendations to the next called meeting of the Board of Trustees for action.

Subject: OMPAC

Resolution 22

Submitted by: Oklahoma County Medical Society

WHEREAS, the threat of Fedicare is becoming greater each year.

WHEREAS, the preventive measures opposing this threat must correspondingly increase annually.

WHEREAS, The Oklahoma Medical Political Action Committee has been active for the past year with the blessings of the American and State Medical Associations.

BE IT RESOLVED, that the Oklahoma County Medical Society and the Oklahoma State Medical Association reaffirm their support of OMPAC and urge active participation of their membership through all possible means to promote "grass roots" awareness and activity in halting the progress of socialism.

Subject: Federal Production of

Goods and Services

Resolution 23

Submitted by: Oklahoma County Medical Society

WHEREAS, the Medical profession has long and vigorously opposed the Federal production of medical services because of inferior and much more costly performance through deficit financing of a fantastic magnitude.

WHEREAS, The same criticism is directed at Fedicare from all facets of private production of goods and services, many of whom have made vigorous and effective attacks on Fedicare.

WHEREAS, In the interest of *consistency of principle* it behooves the medical profession to continue to work with and assume leadership among all other believers in the economic system provided by our Constitutional Republic under God.

WHEREAS, Texas, Louisiana, Wyoming, Nevada, and South Carolina have already approved the 24th (Liberty) Amendment to our American Constitution.

BE IT RESOLVED, that the Oklahoma County Medical Society go on record as approving the 24th Amendment as follows:

Section 1. The Government of the United States shall not engage in any business, professional, commercial, financial, or industrial enterprise except as specified in the Constitution.

Section 2. The Constitution or laws of any State, or the laws of the United States shall not be subject to the terms of any foreign or domestic agreement which would abrogate this amendment.

Section 3. The activities of the United States Government, which violate the intent and purposes of this amendment shall, within a period of three years from the date of the ratification of this amendment be liquidated and the properties and facilities shall be sold.

Section 4. Three years after the ratification of this amendment the sixteenth article of amendments to the Constitution of the United States shall stand repealed and thereafter Congress shall not levy taxes on personal incomes, estates, and/or gifts.

BE IT FURTHER RESOLVED, that this resolution be presented for the approval of the Oklahoma State Medical Association and the Oklahoma State Legislature as well as the United States House of Representatives in the form of the existing HJ Resolution 23.

BE IT FINALLY RESOLVED, that emphasis be placed upon the total potential saving under HJ Resolution 23 amounting to nearly 50 billion dollars yearly and obviating the necessity of individual income, estate and gift taxes amounting to nearly 40 billion dollars. This would leave a surplus of 10 billion dollars to retire the debt or pay for the current annual administrative deficit.

Subject: Mental and Public Health

Resolution 24

Submitted by: Oklahoma County Medical Society

WHEREAS, the Administrative branch of our Federal Government has proposed

federal Public Health financed construction and staffing of community mental health centers throughout the nation.

WHEREAS, these centers will become the equal financial responsibility of federal, state and community taxpayers, each source eventually contributing a billion dollars to the program, thereby enlarging the one and one-fourth trillion dollar mortgage on future generations through an already fantastic method of deficit spending for politically defined and oriented current "needs" of our citizens.

WHEREAS, the need for such a program has not been established and the definition of the state of mental illnesses has not been established even among psychiatrists and certainly not through politically motivated federal laity who historically have successfully detracted from the excellence, economy, and magnitude of local care by substituting Medicare.

WHEREAS, the Federal Administration has recognized a shortage of trained psychiatrists for existing mental health facilities and have proposed the use of psychologists and social workers to staff community mental health centers—a manifest and serious danger to the existing status of our national mental health.

WHEREAS, the training and ability of all members of the medical profession presently caring for the mental health needs of our people are surely superior to that of non-medical federally trained mental therapists, and as proposed, housewives.

WHEREAS, the plan for community mental health programs proposes State and Federal Public Health supervision and operation with some 12 such centers already functioning under the Oklahoma State Department of Public Health. Recent federal plans propose the use of Domestic Peace Corps personnel in such facilities.

THEREFORE BE IT RESOLVED, that the Oklahoma County Medical Society continue to support the best possible training of more psychiatrists and optimum use and needed expansion of existing medically administered and supervised community men-

tal health facilities for those persons with a medically established mental health need and go on record as opposing these present health proposals.

BE IT FURTHER RESOLVED, that Public Health activities be confined to mass preventive programs and not be extended into the fields of diagnosis and therapy.

BE IT FURTHER RESOLVED, that this resolution be considered the policy of the Oklahoma State Medical Association and the American Medical Association.

BE IT FURTHER RESOLVED, that these recommendations be made known by every member of said Association to their associates and representatives in their state and federal governments.

**Subject: Comprehensive Area Wide
Community Health Surveys Resolution 25
Submitted by: Oklahoma County Medical Society**

WHEREAS, there can be only commendation for voluntary group and community cooperative efforts toward the improvement of health, now and in the future.

WHEREAS, Fedicare programs of all sorts are gradually forcing the state through the channels of "earning" federal funds by matching state funds to enforce federal operation and control of local community and group activities.

WHEREAS, local community and group programs in health and all other endeavors provide the most economical, well supervised and effective means of local social betterment.

BE IT RESOLVED, that the Oklahoma County Medical Society go on record as favoring local, competitive, voluntary welfare programs and planning of health, education, and welfare which have proven statistically to greatly exceed the proposed accomplishments outlined by our Fedicare planners of five and ten years ago.

BE IT FURTHER RESOLVED, that Oklahoma County Medical Society members exert every effort to support and work with local group and community projects and discourage the principle of frequently inferior plans, programs, goals, and methods of fi-

nancing and control proposed by the Fedicare planners.

BE IT FINALLY RESOLVED, that Oklahoma County Medical Society members exert every effort to prevent such community plans to be legislatively incorporated into state or federal programs of financing and inevitable control and that this be presented to the Oklahoma State Medical Association and American Medical Association for their adoption.

**Subject: Membership—United States
Chamber of Commerce Resolution 26
Submitted by: Oklahoma County Medical Society**

WHEREAS, our profession in the practice of the Art and Science of Medicine has been seriously threatened and much progress made by those who would subsidize and control our professional activities from the federal level.

WHEREAS, We as physicians, though much concerned and somewhat active in combatting this threat, have not been and are not able to halt the constant invasion of Fedicare programs.

WHEREAS, The largest business and professional organization in our nation, the United States Chamber of Commerce, has placed Fedicare among the half dozen top threats to the survival of our nation and has been given credit by officials in the American Medical Association as being the most powerful force in the nation in opposing Fedicare.

BE IT RESOLVED, that the Oklahoma County Medical Society as a professional organization apply for membership in the United States Chamber of Commerce as a token of appreciation for the magnificent job done over the past 20 years in combatting Fedicare. Such a membership and recognition therefrom would be of much benefit in improving the image of our profession among the professional and business groups with whom we are ideologically allied.

BE IT FURTHER RESOLVED, that this affiliation, in providing a voting privilege in the United States Chamber of Commerce be used each year to lend more force to the

principles of social action in which we believe.

BE IT FURTHER RESOLVED, that our action be made known to all County Medical Societies in Oklahoma and presented as a resolution to the State Medical Association to encourage the application of these organizations for voting membership in the United States Chamber of Commerce.

BE IT FURTHER RESOLVED, that the Oklahoma State Medical Association apply for membership into the United States Chamber of Commerce.

**Subject: Appropriation for Medical
Examiners Law Resolution 27
Submitted by: Oklahoma County Medical Society**

WHEREAS, after long and continued effort by members of the Oklahoma State Medical Association, a satisfactory law was passed regarding unexplained deaths in the State of Oklahoma; and

WHEREAS, members of the Board of Unexplained Deaths and many physicians of the State have given their time and skill to insure the function of such law; and

WHEREAS, since the passage of said law, no funds have been appropriated to insure its workability,

THEREFORE, BE IT RESOLVED, that the Oklahoma County Medical Society requests that such funds be appropriated as necessary for the Board of Unexplained Deaths to fulfill the functions intended; and

BE IT FURTHER RESOLVED, that this resolution be placed before the House of Delegates of the Oklahoma State Medical Association for action.

**Subject: Relative Value Schedules Resolution 28
Submitted by: Washington-Nowata County Medical Society**

WHEREAS, the development of a relative value scale of fee schedules has been urged upon us and our profession, primarily by "third parties," interested neither in our profession nor our privileged relationship with our patients, but instead to satisfy their own needs and in so doing undermine the right of each individual physician to deal di-

rectly with his patient for the service to be rendered and the fee to be charged; and

WHEREAS, the development of a relative value scale of fee schedules would allow persons outside our profession to use these schedules for the purposes of bargaining, fee setting, and "total coverage" programs, and would allow these persons to use this schedule to attempt to control and "hold down" medical charges, disregarding completely that many times no fees are charged for services rendered, and that in any instance in which suitable adjustments in such programs have been attempted, the physician and the medical profession are regarded as the sinner and "gouger," in spite of the known fact that physician's fees have not increased in proportion to the rising cost of living; and

WHEREAS, the development of such a program of relative value scale is one more attempt to enlist the physician in a program of compromise and surrender which, if allowed to continue, can only lead to the ultimate adoption of government control of such a schedule, and along with it the entire medical profession; and

WHEREAS, the development of such a program is impossible, since it cannot of necessity take into consideration the obvious non-standardization of the multiplicity of procedures in the practice of medicine, when performed by more than one physician, and cannot take into consideration that no two patients can be placed on a scale and standardized, and cannot stereotype any given medical case with regards to risk, pathology, care and time involved, training of the individual physician, and many other nebulous factors that are so inherent in the time-honored doctor-patient relationship.

THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association considers that the only proper and satisfactory fee arrangement in a free enterprise society is that reached by private contract between individual patient and physician, and that activities by "third parties" in the medical care field should be limited to developing contracts between themselves and potential

patients.

Subject: AMPAC and OMPAC

Resolution 29

Submitted by: Washington-Nowata County Medical Society

WHEREAS, the objectives of the American Medical Political Action Committee are commendable by assisting physicians and others to organize for more effective political action and in carrying out civic responsibilities, by encouraging physicians to understand the true nature of their government as to important political issues and as to the records of office holders and candidates for elective office, and by stimulating doctors and others to take a more active and effective part in governmental affairs, including the election of desirable candidates to office; and

WHEREAS, the objectives of the Oklahoma Medical Political Action Committee are similarly commendable in their application at the local level.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association officially recognize and endorse the American Political Action Committee and its component, the Oklahoma Medical Political Action Committee for their commendable programs of activities; and further, that the Oklahoma State Medical Association recommend to its members that they become active dues-paying members of AMPAC and OMPAC.

Subject: Blue Shield Indemnity Contract

Resolution 30

Submitted by: Washington-Nowata County Medical Society

WHEREAS, the new National Blue Shield Plan for the aged as proposed by the American Medical Association is a service plan insurance program; and

WHEREAS, service plan insurance injects a third party for the purpose of limiting, lowering and stereotyping medical professional fees; and

WHEREAS, the doctor's fees are the economic responsibilities of the physician and his patient.

THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association does not approve the new National Blue Shield Service Contract and encourages its members not to participate in the program; and

BE IT FURTHER RESOLVED, that we recommend instead, an indemnity type contract be worked out.

Subject: The Bauer Statement Resolution 31
Submitted by: Washington-Nowata County Medical Society

WHEREAS, the House of Delegates of the American Medical Association in June, 1961, enthusiastically endorsed the statement of principle introduced by Doctor Louis H. Bauer; the statement being as follows:

"The House of Delegates of the American Medical Association records its opposition to any legislation of the King-Anderson type. Its opposition is based on the facts that such legislation does not meet the needs of the situation; interferes with the doctor-patient relationship; interferes with the rights of doctors employed in hospitals; is inordinately expensive; leads inevitably to further encroachments by government into medical care; results eventually in a deterioration of the type of medical care rendered the public; and is therefore detrimental to the public interest.

"The House of Delegates invites attention to the fact that the medical profession is the the only group which can render medical care under any system and that the medical profession is best qualified to determine how the best medical care can be delivered.

"The House of Delegates believes that the medical profession will see to it that every person receives the best available medical care regardless of his ability to pay; and it further believes that the profession will render that care according to the system it believes is in the public interest; and that it will not be a willing party to implementing any system which we believe to be detrimental to the public welfare"; and

WHEREAS, the Federal Administration continues to push for a type of medical care for the elderly regarded by most physicians

as inimical to the best interests of both patient and physician; and

WHEREAS, the Administration has instituted traveling Department of Health, Education and Welfare Conferences (at taxpayers expense) to try to sell this fallacious idea to the public.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association approves the Bauer statement and encourages its members in each county of the State of Oklahoma to help formulate and effectuate definite plans to inform the public correctly and to oppose all legislation of the King-Anderson type.

BE IT FURTHER RESOLVED, that the doctors of the OSMA will pledge themselves to continue to care for all patients regardless of ability to pay.

Subject: Preceptorship Program Resolution 32
Submitted by: Resolutions Committee

WHEREAS, the preceptorship method of teaching medical school students has had an adequate trial of its objectives and function; and

WHEREAS, this program has had a good influence on the students, to acquaint them with the problems and virtues of private practice; and

WHEREAS, the program has been an asset to the preceptor as well;

NOW THEREFORE BE IT RESOLVED, that the Oklahoma State Medical Association commends the University of Oklahoma School of Medicine for its preceptorship program; and

BE IT FURTHER RESOLVED, that the program be continued as an integral part of every medical student's course of instruction.

Subject: Foreign Interns and Residents Resolution 33
Submitted by: Resolutions Committee

WHEREAS, in the preceding years, there have been large numbers of graduates of foreign medical schools serving as interns and residents in the United States; and

WHEREAS, many approved hospitals have only these graduates for internships and residencies; and

(Continued on Page 204)



MRS. MILTON L. BERG
Tulsa
President
Woman's Auxiliary
Oklahoma State
Medical Association



MRS. TOM C. SPARKS
Ardmore
President-Elect
Woman's Auxiliary
Oklahoma State
Medical Association



MRS. C. RODNEY STOLTZ
Watertown, S. D.
President-Elect
Woman's Auxiliary
to the American
Medical Association



MRS. ELIAS MARGO
Oklahoma City
President
Woman's Auxiliary
Southern Medical
Association



MRS. JAMES P. LUTON
Oklahoma City
1st Vice-Pres.
Woman's Auxiliary
Oklahoma State
Medical Association



MRS. RICHARD E. WITT
Muskogee
2nd Vice-Pres.
Woman's Auxiliary
Oklahoma State
Medical Association



MRS. J. F. YORK
Madill
Secretary
Woman's Auxiliary
Oklahoma State
Medical Association



MRS. C. F. FOSTER, JR.
Oklahoma City
Treasurer
Woman's Auxiliary
Oklahoma State
Medical Association



MRS. F. H. MCGREGOR
Oklahoma City
Treas.-Elect
Woman's Auxiliary
Oklahoma State
Medical Association



MRS. THOMAS L. OZMENT
Tulsa
General Chairman

WOMAN'S AUXILIARY

to the

OKLAHOMA STATE MEDICAL ASSOCIATION

ANNUAL MEETING

May 2-3-4, 1963

MAYO HOTEL

TULSA, OKLAHOMA

MRS. THOMAS L. OZMENT
Convention Chairman

MRS. LEONARD L. KISHNER
Co-Chairman

REGISTRATION and INFORMATION

THURSDAY, MAY 2, 1963

Mayo Hotel, Mezzanine Floor, French and English
Rooms—1:00 p.m.-5:00 p.m.

Hospitality Rooms—French and English Rooms, Mayo Hotel

The Hospitality rooms will be open during registra-
tion hours, Thursday through Saturday, for the con-
venience of members and guests. Refreshments will
be served.

OKLAHOMA DOCTORS' AND AUXILIARY MEMBERS' HOBBY SHOW

MRS. FRANK L. FLACK
Chairman

MRS. CHARLES E. BRIGHTON
Co-Chairman

Hobbies of Oklahoma Physicians and Auxiliary mem-
bers are presented in this interesting exhibit, and will
be on display on the 16th Floor of the Mayo Hotel.

TICKETS

Tickets for the luncheons will be sold at the Regis-
tration desks.

WOMAN'S AUXILIARY

to the

OKLAHOMA STATE MEDICAL ASSOCIATION

Mayo Hotel

Tulsa, Oklahoma

ANNUAL MEETING

May 2-3-4, 1963

MEDICAL ADVISORS 1962-1963

Walter E. Brown, M.D.
Tulsa

Pat Fite, Sr., M.D.
Muskogee

Clinton Gallaher, M.D.
Shawnee

PROGRAM

THURSDAY, MAY 2, 1963

- 1:00 p.m.-5:00 p.m.—REGISTRATION AND INFORMATION, Mezzanine, French and English Rooms, Mayo Hotel
- 3:00 p.m.—PRE-CONVENTION BOARD MEETING for members of the Executive Board, 3225 East 61st Street. Transportation from the Mayo Hotel to this address, the home of Doctor and Mrs. Berg, will be available and will leave the Mayo Hotel promptly at 2:30 p.m.
- 5:00 p.m.-7:00 p.m.—RECEPTION FOR BOARD MEMBERS AND THEIR HUSBANDS, HONORING MRS. C. RODNEY STOLTZ AND MRS. ELIAS MARGO, home of Doctor and Mrs. Milton L. Berg, 3225 East 61st Street.

FRIDAY, MAY 3, 1963

- 8:30 a.m.—PAST PRESIDENT'S BREAKFAST, President's Suite, Mayo Hotel. Hostess: Mrs. Donald L. Mishler.
- 9:00 a.m.—REGISTRATION, INFORMATION AND HOSPITALITY, Mezzanine, French and English Rooms, Mayo Hotel.
- 10:00 a.m.—FIRST GENERAL SESSION, Emerald Room, Mezzanine, Mayo Hotel, Mrs. Milton L. Berg, President, Woman's Auxiliary to the Oklahoma State Medical Association, presiding.

CALL TO ORDER: Mrs. Berg.

INVOCATION: Mrs. James P. Luton, First Vice-President, Woman's Auxiliary to the Oklahoma State Medical Association.

PLEDGE OF LOYALTY: Mrs. Tom C. Sparks, President-Elect, Woman's Auxiliary to the Oklahoma State Medical Association.

"I pledge my loyalty and devotion to the Woman's Auxiliary to the American Medical Association. I will support its activities, protect its reputation, and ever sustain its high ideals."

WELCOME: Mrs. Harold J. Black, President, Woman's Auxiliary to the Tulsa County Medical Society.

GREETINGS: J. Hoyle Carlock, M.D., President Oklahoma State Medical Association.

INTRODUCTION OF SPECIAL GUESTS: Mrs. Virgil Ray Fosester, Director, Woman's Auxiliary to the American Medical Association and Doctor's Day Chairman of Woman's Auxiliary to the Southern Medical Association. Sponsor: Mrs. Charles G. Stuard, Program Chairman, Woman's Auxiliary to the Oklahoma State Medical Association.

Mrs. Elias Margo, President, Woman's Auxiliary to the Southern Medical Association. Sponsors: Mrs. Joseph W. Kelso, Past-President, Woman's Auxiliary to the Southern Medical Association, and Mrs. Worth M. Gross, Councilor, Woman's Auxiliary to the Southern Medical Association.

Mrs. C. Rodney Stoltz, President-Elect, Woman's Auxiliary to the American Medical Association. Sponsors: Mrs. Virgil Ray Forester, Past President, Woman's Auxiliary to the Oklahoma State Medical Association, and Mrs. Eric M. White, Corresponding Secretary, Woman's Auxiliary to the Oklahoma State Medical Association.

GUEST SPEAKER: Mrs. C. Rodney Stoltz.

MEMORIAL SERVICE: Mrs. Walter Cale, Mrs. Thomas D. Burnett, Mrs. J. F. Curry, and Mrs. Robert G. White, members of Tulsa County Auxiliary from Sapulpa.

ANNOUNCEMENTS BY GENERAL CHAIRMAN OF CONVENTION. Mrs. Thomas L. Ozment.

ROLL CALL BY COUNTIES: Mrs. C. F. Foster, Jr., Treasurer, Woman's Auxiliary to the Oklahoma State Medical Association.

TREASURER'S REPORT: Mrs. C. F. Foster, Jr., and Mrs. F. H. McGregor, Treasurer-Elect.

READING AND ADOPTION OF THE MINUTES: Mrs. J. F. York, Secretary, Woman's Auxiliary to the Oklahoma State Medical Association.

REPORT OF THE CREDENTIALS COMMITTEE: Mrs. Donald W. Bobek.

REPORTS AND INTRODUCTION OF OFFICERS AND COMMITTEE CHAIRMEN:

First Vice-President, Mrs. James P. Luton
Second Vice-President, Mrs. Richard E. Witt
Corresponding Secretary, Mrs. Eric M. White
Parliamentarian, Mrs. Pat Fite, Sr.
Historian and Archivist, Mrs. Clifford M. Bassett

Editor, Mrs. William R. R. Loney
Co-Editor, Mrs. James B. Thompson
American Medical Association-Education Research Foundation, Mrs. Virgil Ray Forester
Civil Defense, Mrs. Neil W. Woodward
Community Service, Mrs. James Loudon
Doctor's Day, Mrs. Joseph W. Kelso
Doctor's Hobbies, Mrs. Frank L. Flack
Editor, Woman's Auxiliary Page in *The Journal*, Oklahoma State Medical Association, Mrs. Joseph J. Maril

Finance-Budget, Mrs. Louis S. Frank
By-Laws and Revisions, Mrs. Millard L. Henry
Legislation, Mrs. E. B. Thomasson
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Mental Health, Mrs. W. R. Coutant
National Bulletin, Mrs. Charles A. Smith
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Rural Health, Mrs. Robert M. Stover
Safety, Mrs. Glen L. Berkenbile
Student American Medical Auxiliary, Mrs. Jess E. Miller
International Health Activities, Mrs. Ceylon S. Lewis, Jr.
District Councilor Chairman, Mrs. Coye W. McClure
Gifts and Favors, Mrs. Dick H. Huff
Handbook and Revisions, Mrs. C. L. Oglesbee and Mrs. Gilbert Tracy
Hospitality, Mrs. Joe M. Parker, Mrs. Earl M. Bricker, and Mrs. John Orbin

REPORT OF THE NOMINATING COMMITTEE: Mrs. Tom C. Sparks, President-Elect, Woman's Auxiliary to the Oklahoma State Medical Association.

ANNOUNCEMENTS: Mrs. Berg.

ADJOURNMENT

12:45 p.m.—LUNCHEON, "WHEEL OF FASHION," The Tulsa Club, 115 E. 5th Street, 9th Floor.

honoring Mrs. Milton L. Berg, President and Mrs. Tom C. Sparks, President-Elect of Woman's Auxiliary to the Oklahoma State Medical Association.

Fashions by Nan Pendleton's Shop—Commentary, Mrs. Howard McAfee.

Special Guests: Mrs. C. Rodney Stoltz, President-Elect, Woman's Auxiliary to the American Medical Association, Mrs. Elias Margo, President, Woman's Auxiliary to the Southern Medical Association, Mrs. Virgil Ray Forester, Director, Woman's Auxiliary to the American Medical Association.

SATURDAY, MAY 4, 1963

9:00 a.m.—REGISTRATION, INFORMATION, HOSPITALITY, Mezzanine, French and English Rooms, Mayo Hotel.

10:00 a.m.—SECOND GENERAL SESSION, Emerald Room, Mezzanine, Mayo Hotel, Mrs. Milton L. Berg, President, presiding.

CALL TO ORDER: Mrs. Berg.

INVOCATION: Mrs. Clifford M. Bassett, Past-President, Woman's Auxiliary to the Oklahoma State Medical Association.

PLEDGE OF LOYALTY: Mrs. Frank L. Flack, Past-President, Woman's Auxiliary to the Oklahoma State Medical Association.

"I pledge my loyalty and devotion to the Woman's Auxiliary to the American Medical Association. I will support its activities, protect its reputation and ever sustain its high ideals."

WELCOME: Mrs. Robert L. Anderson, President-Elect, Woman's Auxiliary to the Tulsa County Medical Society.

GREETINGS: President-Elect, Oklahoma State Medical Association.

INTRODUCTIONS: Advisory Board: Walter E. Brown, M.D., Pat Fite, Sr., M.D., Clinton Gallaher, M.D.

Mr. Don Blair, Executive Secretary, Oklahoma State Medical Association. Mr. Jack Spears, Executive Secretary, Tulsa County Medical Society and Donald L. Brawner, M.D., General Chairman of Convention.

GUEST SPEAKER: Mrs. Elias Margo, President, Woman's Auxiliary to the Southern Medical Association.

ROLL CALL BY COUNTIES: Mrs. C. F. Foster, Jr., Treasurer, Woman's Auxiliary to the Oklahoma State Medical Association.

AMERICAN MEDICAL POLITICAL ACTION COMMITTEE: Mrs. Virgil Ray Forester, Director, Woman's Auxiliary to the American Medical Association.

REPORTS: COUNTY PRESIDENTS

Atoka-Bryan-Coal	Mrs. Raymond L. Engles
Carter-Love-Marshall	Mrs. Malcom Horne
Cleveland-McClain	Mrs. D. F. Robinson
Commanche-Cotton	Mrs. Wm. A. Matthey
Cookson Hills	Mrs. W. S. Womach
Custer	Mrs. Dayton Royse
East Central	Mrs. Pat Fite, Jr.
Garfield-Kingfisher	Mrs. B. J. Cordonnier
Grady-Caddo	Mrs. M. Wm. McDoniel
Kay-Noble	Mrs. L. H. Becker
Kiowa-Washita	Mrs. Richard F. Shriner
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Payne-Pawnee	Mrs. George Smith
Pittsburg	Mrs. C. K. Wisdom
Pontotoc	Mrs. Ray Northrip
Stephens	Mrs. C. H. Smith
Tulsa	Mrs. Harold J. Black
Washington-Nowata	Mrs. C. S. Huntington

REPORT OF CREDENTIALS COMMITTEE: Mrs. Donald W. Bobek, Chairman.

OLD BUSINESS

NEW BUSINESS

ELECTION OF DELEGATES TO NATIONAL CONVENTION

ELECTION OF OFFICERS

INSTALLATION OF OFFICERS AND COUNCILORS: Mrs. C. Rodney Stoltz, President-Elect, Woman's Auxiliary to the American Medical Association.

PRESENTATION OF PAST PRESIDENT'S EMBLEM: Mrs. Virgil Ray Forester, Past-President.

PRESENTATION OF PRESIDENT'S PIN AND GAVEL: Mrs. Milton L. Berg.

ANNOUNCEMENTS BY CONVENTION CHAIRMAN: Mrs. Thomas L. Ozment.

ADJOURNMENT

- 1:00 p.m.—LUNCHEON — POST CONVENTION SCHOOL OF INSTRUCTION, Founder's Room, Mezzanine, Mayo Hotel, Mrs. Tom C. Sparks, presiding.
- 6:30 p.m.—SOCIAL HOUR, Pompeian Court, Mezzanine, Mayo Hotel.
- 7:30 p.m. to
- 1:00 a.m.—PRESIDENT'S INAUGURAL DINNER-DANCE, Crystal Ballroom, Mayo Hotel.

CONVENTION COMMITTEE

MRS. THOMAS L. OZMENT, *Chairman*
MRS. LEONARD L. KISHNER, *Co-Chairman*

Registration	Mrs. Joe Burge
Credentials	Mrs. Donald W. Bobek
Hospitality Room	Mrs. Lawrence E. Thompson, Jr.
Luncheon	Mrs. George E. Adams
Fashion Show	Mrs. Matthew B. Moore
Courtesy	Mrs. James W. Kelley
Tickets	Mrs. J. K. Farish
Past-Presidents' Breakfast	Mrs. Donald L. Mishler
Hobby Show	Mrs. Frank L. Flack
	Mrs. Charles E. Brighton
Decorations	Mrs. Dick H. Huff
	Mrs. C. F. Foster, Jr.
	Mrs. Walter K. Hartford
	Mrs. F. H. McGregor
	Mrs. Wm. Best Thompson
	Mrs. Harrell C. Dodson, Jr.
	Mrs. Virgil Ray Forester
	Mrs. Henry C. Traska
	Mrs. Lyle Burroughs
	Mrs. Thomas L. Ozment
	Mrs. Leonard L. Kishner
	Mrs. George E. Adams
Pages and Timekeepers	Mrs. Joe M. Parker
	Mrs. Earl M. Bricker
	Mrs. John Orbin
Publicity	Mrs. Worth M. Gross
	Mrs. Robert W. Spencer

MENTAL HEALTH ADMINISTRATION

(Continued from Page 129)

The most fundamental principle of administration is the "principle of unity of command." This means vesting both authority and responsibility in administrative heads. Authority must be commensurated with responsibility, and responsibility must be clearly defined. Any attempt to separate authority and responsibility will be disastrous.

Manpower must be utilized at its highest level of competence. This means division of labor, teamwork, functional division, training and coordination of efforts both within the Department and with other agencies. Proper delegation (but not abrogation) of authority and responsibility is essential. It is necessary to have competent people to which this delegation can be made.

Good personnel practices and policies are necessary. Discipline must be maintained but employees must be treated fairly. They must not be subjected to unjust criticism, whether from within or without. Strong dedicated leadership is essential. High morale among employees means high patient morale and hence a better treatment environment. Poor leadership, disparagement, discrimination, low wages, long hours, expectations which cannot be fulfilled, and lack of advancement opportunities are not conducive to good morale.

Any program to be effective must have adequate material resources, sufficient qualified personnel and proper administration. If any of these factors are deficient, the program will suffer.

The Mental Health Administrator

Being a mental health administrator calls for qualities of leadership, psychiatric knowledge, dedication to professional humanitarian goals, broad clinical experience and executive ability. He has to be a well-integrated combination of manager and professional. He always thinks first in terms of human beings. He must inspire a sense of optimism.

He must supply emotional support and encouragement to his subordinates. He must by word and deed teach understanding and respect for others. He must be firm when the occasion calls for it, but not autocratic. He must delegate authority and responsibility to his subordinates.

The lay mental health administrator, unless subordinate to a psychiatrist, is definitely handicapped. He lacks professional status, experience, knowledge and prestige to command the respect of subordinates. To compensate, he is likely to project on professional subordinates such attitudes as that they are all impractical hair-brains.

The more successful lay administrator will recognize his limitations and abrogate his authority by going along with everything his medical supervisor wants him to. The consequences are not always good, since in the final accounting he is responsible—not the physician. The physician is not as likely to use his best judgment, since he is not held accountable for his own decisions.

We can't stress too much the importance of vesting both authority and responsibility in the psychiatrist administrator. State mental health services should be under competent dedicated psychiatric leadership. If our mental health programs are to advance, it will require the leadership of psychiatrists who can see the problem as a whole. Power struggles between lay administrators and professionals can not make for a good program.

History of Psychiatric Administration

The original function of hospitals was custodial care of dying paupers. No upper or middle-class family would dream of hospitalizing one of their members. The function, status and reputation of the general hospital has radically changed. Mental hospitals, established to store the pauper insane, are changing, but have not changed as radically as general hospitals. An aroused public is demanding that mental health care be brought up to the level which

twentieth century man feels he deserves. Physicians have always strongly advocated better care of the mentally ill.

The oldest medical society in the United States was founded by thirteen mental hospital superintendents, in 1844. These early leaders strongly opposed lay wardens administering mental hospitals, neglect and abuse of patients, partisan politics in hospitals and custodial attitudes. They also advocated the conversion of asylums into therapeutic communities (administrative therapy was referred to as "moral treatment"). Psychiatrists have consistently, through the years, held these same views toward the care of the mentally ill.

The American Psychiatric Association, recognizing that the psychiatrist administrator needs training in management, in addition to a broad training in psychiatry, set up in 1962, a board to examine and certify candidates after additional training in psychiatric administration. Your present director and some of your hospital superintendents have been so certified.

A majority of states now have Departments or Divisions of Mental Health under the direction of a psychiatrist. Those states with autonomous departments tend to make the most progress. While quite a few states still have some fragmentation, such as community services, alcoholic program, and services for retarded located in other departments, the tendency is toward transferring these mental health functions into the Department of Mental Health. During the past two years a number of such transfers have been made.

Most mental hospitals are organized with a physician as the chief executive and business manager (or steward) under him in charge of the business aspects of the hospital. Business managers should be well trained, preferably in hospital administration, and competent administrators. Too often in past decades they were incompetent, political appointees, and subject to removal

with a change in state administration.

The question of returning mental health programs to the control of lay administrators rears its ugly head quite regularly. This agitation for such a regression arises from four sources: those who would like to re-introduce partisan politics, those who fail to understand the functions of mental health facilities and psychiatric treatment, those who hope to get good state jobs, and those who, noting the difficulty of filling key positions with competent psychiatrist administrators, wonder if a good lay administrator wouldn't do.

All cases, to my knowledge, where lay administrators have been tried in public mental hospitals, have ended in dismal failures. Perhaps the best example is the Veterans Administration which tried it for many years with deteriorating results. North Dakota tried it for five years before conditions became so bad they had to reinstate psychiatrists. Michigan is now, I hear, in the process of putting their mental health program under a psychiatrist director, after having their program under a lay director for many years. Minnesota has recently placed lay administrators in charge of three of their hospitals. Two of those hospitals are now in utter chaos and their entire program is demoralized. Puerto Rico has a dual administration in their one commonwealth mental hospital. Conditions there, when I visited that institution in 1956, were unbelievably bad with the staff divided into two warring camps. The only way they can get a competent physician to work there is to finance his psychiatric education in the States. All psychiatrists leave as soon as their obligated service is completed. It is my understanding that recently two other states have replaced their directors with a rancher and potato chip salesman. That such people can direct a mental health program in a state, I leave to your judgment. Naturally, there may be a few exceptional lay administrators who could do a good job. While such a possibility exists, it is highly improbable that such people would end up

in top mental health executive positions.

Organization of Mental Health Services

The organizational pattern of mental health services varies considerably from state to state. In many states these services are fragmented in several other departments. In some states with only one state hospital, the superintendent frequently doubles as the program director for the state. A few states, e.g., Wisconsin, have an omnibus department with divisions of mental health, corrections, welfare, youth services, etc. A few states have a division of mental health under the welfare department or public health department. Some states have an autonomous department of mental health with the welfare commission or board of health also functioning as the mental health board, e.g., Kansas and Maryland. Kentucky has an autonomous department of mental health, but also has a social welfare commission, similar to Governor Bellmon's proposal, which has no administrative authority over the departments in the commission and acts only as a planning and coordinating body. Some states have a department of institutions which includes state mental hospitals as well as other state institutions. So far as I know, no state now has a dual administration set-up at this time.

Many states have autonomous departments of mental health under the direction of a psychiatrist and for most states this has been the most satisfactory administrative arrangement. Such a department should include community mental health services, institutional programs, retarded programs (except programs carried on in public schools), alcoholic programs, etc.

Oklahoma has an autonomous Department of Mental Health and Mental Retardation under the direction of a certified psychiatrist. A statutory seven man Mental Health Board appoints the director and serves as a policy setting body. Appointments are for seven year staggered terms.

... AND WE'LL KEEP THEM
HEALTHY ALL SUMMER!



36TH YEAR

- Coaching, competing, and conditioning in all sports.
- White and Buffalo River canoe trips.
- Swimming, diving, water skiing, Scuba diving.
- Riflery, archery and fishing.

— ● —

IN THE HEART OF THE
OZARKS
ON LAKE TANEYCOMO
BRANSON, MISSOURI

— ● —



5TH YEAR

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- River and lake canoe trips.
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- Swimming and water skiing.
- Riflery and archery.
- Drama, Poise and Charm.

— ● —

TWO FIVE WEEK TERMS
Ages: 8 thru 16

— ● —

Write for catalog, movie dates, and
list of Oklahoma Patrons:

Winter Address
C. G. "SPIKE" WHITE
702 Thomas Lane
College Station, Texas

The Board must contain two physicians (one a psychiatrist) and one attorney. The Department is responsible for Oklahoma's Mental Health program; however the Department of Health now receives federal mental health funds. Business functions of the institutions are under a business manager who is responsible to the superintendent. Our administrative set-up is the best possible, but the central office needs strengthening by having more personnel and funds so that better controls can be maintained.

Many states in their administrative organization violate an old principle in public administration known as the "principle of homogeneity," which means essentially that same and closely similar functions should be grouped together administratively.

Luther Gulick (*Notes on the Theory of Organization*) states, "In the realm of government it is not difficult to find many illustrations of the unsatisfactory results of non-homogeneous administrative combinations. . . . No one would think of combining water supply and public education, or tax administration and public recreation. In every one of these cases, it will be seen that there is some element either of work to be done, or of the technology used or the end sought which is non-homogeneous. Another phase of the combination of incompatible functions in the same office may be found in the common American practice of appointing unqualified laymen and politicians to technical positions . . ."

A good example of violation of the principle of homogeneity is the proposal, sometimes advocated, of putting mental health under the welfare department. C. H. Hardin Branch, in a recent Presidential Address, comments thus: "Where the welfare department administers hospitals, there is the disturbing tendency to equate the mental hospitals with the welfare side of departmental activities, thus identifying mentally ill people with indigents or paupers. This is unfortunate, but it is the natural result of placing mental pa-

tients and indigents under the same political bureau."

With developing trends in mental health programs, it will be increasingly more important to assure that they will be under competent professional direction. Mental health programs must have leaders with the know-how and authority to move the program along. Admiral Rickover sees one of the greatest threats to our nation as being the development of "a corps of administrators" who are determined "to turn our professional men into technicians and obedient yes-men."

Mental health care is definitely moving back toward the local community. President Kennedy has proposed to Congress that the federal government support this trend. As much as possible should be returned to the private sector of medical care. Through mental services acts, e.g., Short-Doyle Act in California, local communities should be encouraged to develop their own services for the mentally ill and retarded. State mental hospitals in the future will likely become community mental health centers with certain specialized services. These developments will call for an expanded role for mental health departments.

Objectives of the Mental Health Program

The chief purpose of any health organization (including mental health) is to cure the sick. Promoting health is the primary objective of the physician; therefore, the physician must be given dominance in the administration of health facilities.

Since the days of Hippocrates, physicians have been committed to a professional code. Cure, relief of misery and concern for the individuals' health and happiness are professional goals of the physician. The physician's life and work take meaning from fulfilling the goals of his profession. The physician can not function under lay direction, for to do so would violate the spirit underlying his professional code.

"Administration has to do with

getting things done, with the accomplishment of defined objectives" (Luther Gulick: *Science, Values and Public Administration*). "Managing by objectives" is the aim of any good administrator. In industry, an objective might be maximization of long term profit. In medical facilities, objectives are identical with the physician's professional objectives. The danger is present with non-physicians administering medical programs that non-professional goals may take priority over professional goals. Such non-professional goals may be operating as cheaply as possible, pretty buildings and grounds, clean patients and wards, efficient records systems, patient labor and pleasing the public and politicians. The physician administrator may see some of these things as desirable, too, but consider them as only means of providing better care. A health agency, to fulfill its purpose, must operate as a health-promoting agency, not as a business

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in which professional activities are incidental.

Mental health programs strive to prevent and cure mental illness. Failing to do that, they strive to ameliorate and rehabilitate. Although, at present, custodial functions remain an essential part of the mental health program, the major goals are therapeutic. Providing the most humane care possible, training of both professional and non-professional workers to give better care, and search for better methods of treatment for the mentally ill and retarded are essential to the program. C. H. Hardin Branch has defined the goal of any hospital to be the restoration of "each patient to the community, functioning as well as possible in the light of his condition."

"The inculcation of belief in the real existence of a common purpose is an essential executive function" (Chester I. Bernard: *The Function of the Executive*). People identify with the values and objectives of their leaders. As the administrator, the psychiatrist must inspire and institute humane and therapeutic goals. He is supported by those in the allied professions who share the same goals.

More professional supervision, more training for non-professional workers and more public education are necessary to increase understanding and improve care for the mentally ill and retarded.

Administration as Therapy

Harry Stack Sullivan, perhaps the greatest psychiatrist America has ever produced, has said that the mental hospital should be a "school for living." By this he meant that the patient's inter-personal experience in a mental hospital should be a corrective emotional experience in which he learns to live differently with himself and others.

Control of the social atmosphere is the most potent therapeutic measure at our command. The entire hospital (physical and social environment) should be used as a therapeutic instrument. All parts of the organiza-

tion should work collectively toward patient recovery. The psychiatrist attempts to modify the environment to meet the individual and social needs of his patients. Through teamwork and teaching he attempts to modify attitudes of staff and patients to make social interactions more therapeutic. The psychiatrist must constantly strive to understand the effect of every element in the patient's hospital experience and make decisions based upon his understanding. If the psychiatrist doesn't have the administrative authority to control his patient's environment, then he has lost one of his most powerful treatment resources.

"The utilization of every form of therapy available requires planned and systematic use of the whole environment, consisting both of physical resources and social interaction between all categories of staff and patients." (Ester Lucille Brown in *From Custodial to Therapeutic Patient Care in Mental Hospitals*).

Problems of Staffing Facilities

Physicians are not going to give up their professional responsibility for the care of patients to laymen. They are not likely to submit; to do so will mean that some patients will suffer. How can the physicians accept responsibility for patient care without authority? How can he respect the lay administrator's decisions, since he lacks the clinical training and knowledge to make those decisions?

Since professionals must behave in ways which do not violate the spirit underlying their professional code, it's hard to see how any self-respecting physician would work under a lay director. Allied professions would also hesitate to work for a layman, since he would not be as likely to command the respect a physician can.

Placing layman in charge of Oklahoma's mental health program will mean: Loss of virtually all psychiatrists and psychiatric residents; most other physicians; loss of all professional training programs; little or no chance of recruiting other staff; and

elimination of treatment of patients other than that which can be provided by a few part time physicians (who could be induced to come in for emergency work) or disabled physicians unable to find other work.

Legal Responsibility of Mental Health Administrators

The mentally sick person is usually frightened, confused, alienated from friends and relatives, discouraged, discriminated against and helpless. He frequently is lacking in self-confidence and unable to make decisions for himself. He needs tender loving care and protection. Often his civil rights are partially suspended. His care should be in the hands of those professions dedicated to helping mankind.

The mental hospital, to a far greater extent than a general hospital, must control the behavior of patients. Since such control can lead to injustices and cruelties, this control should be in the hands of those who possess the greatest understanding of human behavior.

The superintendent of a mental hospital must protect his patients from harassment from the outside and their civil rights. He must determine incompetency, criminal responsibility, answer writs, etc. He must make final decisions regarding transfer of patients to closed wards and release from the hospital. He must arbitrate staff disagreements regarding handling of patients.

It can be argued that the lay administrator can delegate his legal responsibility to medical staff. But, how can he delegate responsibility he can not, by virtue of his lack of training, assume in the first place? Who will protect the public against unwarranted detention? How can he accept calculated risks inherent in the release of mental patients when he doesn't have the knowledge to make such determinations himself? It's inevitable that the chief executive (layman or psychiatrist) of an institution or the department will have to make clinical decisions. The lay administrator is more vulnerable to pressure from within and without

the organization, since he doesn't have the security of clinical knowledge and professional status.

General Hospitals vs. State Mental Hospitals

It is sometimes argued that, since many general hospitals have lay administrators, state mental hospitals could operate as well with lay executives. While general goals and many functions of both types of hospitals are identical, there are many dissimilarities.

The organization and administration of a state mental hospital is quite different from a general hospital. The superintendent of a state mental hospital has much greater authority and responsibility and is held more accountable for the treatment patients receive. In fact, the general hospital administrator has more of a staff function than a line function. It is his job to provide the means of realizing the physician goals. Physicians, being non-salaried and independent, can exert a powerful influence upon the actions of the general hospital administrator. By virtue of the physician's position and status in the community and the general hospital's dependence upon physicians to bring in patients, the hospital must be administered to suit the medical staff. Most physicians in state mental hospitals are employees of the institution and subject to the control of senior staff and the superintendent; they also have more ward administrative duties than physicians on open staff hospitals.

A number of research studies have been made on the difficulties arising out of the multiple-subordination of employees in general hospitals. For example, nurses are subject to orders from hospital administration, the nursing hierarchy, and physicians. There is considerable conflict in most general hospitals between administrators and physicians as a result of personnel being moved, penny-pinching on equipment and drugs, etc. If the conflict becomes too overt, the administrator has to be replaced, since physicians have greater authority in the final analysis.

General hospitals usually belong to citizens of the community or a religious order and are more open to the community. Their status as therapeutic organizations are well-accepted. When people think of a general hospital, the doctors and nurses who practice there come to mind, not the administrator. The state mental hospital, on the other hand, calls to mind the superintendent. With a physician as the administrator of a mental hospital it is communicated to the public that it is a treatment institution. Such would not be the case if he were not a physician and public confidence would be shaken.

The status of the patient in a mental hospital is quite different also. In a general hospital the patient can leave anytime he objects to the treatment he receives; such is not the case in state mental hospitals.

Mental hospitals differ from general hospitals in that sound clinical administration is more essential. The mental hospital should be in essence a therapeutic community where virtually every policy and decision made is adapted to meet the treatment needs of the patient. The individual and social needs of the patient must be understood and met within the limits of available resources. If his living experience in an institution is to be a therapeutic one, the social atmosphere must be controlled. The superintendent of a mental hospital is so intimately a part of the therapeutic program that a psychiatrist administrator is mandatory.

It is hoped that in time many of the dissimilarities between the two types of hospitals will disappear.

The Concept of Dual Administration

It has been advocated by some that an institution should have two heads—one administrative and one medical. To quote Doctor E. P. Henry, Superintendent of Taft State Hospital, "Anything with two heads is a monster." Such a concept violates the first principle of manage-

ment, known as "the principle of unity of command."

"From the earliest times it has been recognized that nothing but confusion arises under multiple command. 'A man cannot serve two masters' was adduced as a theological argument because it was already accepted as a principle of human relations in everyday life" (Luther Gulick: *Notes on the Theory of Organization*). Taylor, father of scientific management, toyed with dual administration at first but promptly abandoned it. No place in management literature is it possible to find a single advocate of dual administration.

The advantages of a unified command type or organization are summed up by Gulick as follows: "... first, it makes more certain the accomplishment of any given broad purpose or project by bringing the whole job under a single director with immediate control of all the experts, agencies and services which are required in performance of the work. No one can interfere. The director does not have to wait for others, to negotiate for their help and cooperation; ... He can devote all his energies to getting on with the job."

John Johnson (*Harvard Business Review* — July-August 1960) states, "... any endeavor to be successful ... must have one dominant person to whom major decisions can be referred in whom lies the responsibility for the success of the organization. ... Human nature is of such a make-up that invariably one person in the relationship will become dominant." With a business manager in a mental health facility in control of financial expenditures and manpower, there is no question as to who would be dominant. "He who holds the purse strings is always in control!" Dual administration is a myth. It can't exist except to a certain extent in organizations such as the community general hospital. In place of dual administration in mental hospitals we can only have medical administration, lay administra-

tion, or a confusion with warring factions.

Big industries are now experiencing something similar to what would take place in mental hospitals if lay administration should dominate. Since World War II, many industries have established research departments and conflicts between managers and scientists are a serious problem. Managers do not possess the scientific knowledge to administer research departments. Management literature contains many articles on the problems of management-research department relations. Some managers fear that, since many companies are so dependent upon research, managers in the future may have to be engineers or scientists. Some scientists have given up and formed their own research companies to do contract work for industries.

Administration of the Public Psychiatric Hospital (GAP Report #46) discusses the division of authority in the hospital into business and professional autonomies thus: "This is often defended on the ground that a medical administrator is necessarily unacquainted with such as operation of steam generating plants, and that he will dilute his effectiveness in clinical areas, where he does have competency, if he must pay attention to the boilers. Such a division of authority fails, however, to take into account the fact that **all functions of the hospital have an immediate or indirect effect on patient care.** It is likely that co-equal administrators attempting to work toward a common goal will see that goal, subtly or obviously, in different ways. In the rare instance where they do work effectively together, it is not by reason of their administrative relationship but rather in spite of it."

Dual administration has been tried in two states that I know of: Texas and Virginia. In both it had to be abandoned since it wouldn't work.

Administration and Economics

Some people argue that lay administration is cheaper and more

economically efficient. A "cheap" administrator will give a "cheap" performance. To a large extent, people only get what they pay for. If one surveys the salaries of the top business executives, he will immediately discover that they don't come cheap.

It is often said that physicians have no business sense. This is nonsense. No doubt there are to be found some that would fit this stereotype, but what about those who run large public and private facilities, sit on corporation boards, and manage businesses and estates. Many physicians, including psychiatrists, have had special training in administration. There's nothing in the training of a physician which would act as a deterrent to his being a good administrator, unless it is the fact that the physician has a hard time accepting that his patients should die because the drug budget happens to be exhausted. Most of the best medical facilities in the country are administered by physicians.

Effectiveness is the test of good administration, not efficiency alone. Effectiveness means fulfilling the objectives for which an organization exists though inefficiency may well jeopardize an organization's effectiveness. An organization may be ineffective (and uneconomic) even though it operates smoothly and efficiently. This is a case of the means becoming the aim rather than the ends. Unfortunately, some business managers sometimes confuse the business side of the hospital with the hospital itself.

The care of the mentally ill is never cheap. Society pays for it one way or the other. Inadequate funds and neglect lead to long-term expensive custodial care, increase welfare payments, waste in human resources, etc. This has been termed "the paradox of parsimony and extravagance" by Doctor Francis Braceland.

Control of material resources means control of program. Without salaries, food, equipment and supplies there can be no program. I once saw an entire ward recreation program wrecked for want of a piece

BOOK REVIEWS

AN ATLAS OF ANATOMY, BY REGIONS, J. C. Bioleau Grant, Fifth Edition, The Williams & Wilkins Co., Baltimore 2, Maryland, 1962, 665 illustrations, \$19.95.

The appearance of five editions of Grant's *Atlas of Anatomy* within a relatively short period testifies to its great popularity. In many medical schools of this country it has replaced the older German atlases of Spalteholz, Sobotta, and Toldt. The work is a credit to the outstanding scholarship and pedagogical talent of the author. Rembrandt's *ANATOMY LESSON OF DR. NICOLAES TULP* now decorates the front cover and testifies to the intent of author and publishers of making the atlas not only informative and educational, but also aesthetically attractive. Its perusal is a source of enjoyment to novice and expert alike.

The following alterations and additions stand out in this new edition. The nomenclature has been changed to the new international terminology (N.A.P.). The art work is lucid and strikes a happy medium between life-like reproduction and schematization. All pictures have been re-engraved for this edition and several have been replaced. The page layout has been improved and the type has been enlarged and become much more readable.

A number of new drawings have been added; outstanding among them are those that incorporate the new concept of segmental anatomy, also for liver and kidney. Diagrams from the author's *Method of Anatomy* have

of plywood which the business manager insisted the hospital could not afford. (Unfortunately, the superintendent abrogated his authority by allowing the business manager to override him.) The lay administrator, if he has authority over the physicians, may nullify medical decisions or stop the development of new programs. He may allot funds for non-treatment functions that should be spent for patient care. He may

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been added and are helpful in the visualization and comprehension of important anatomical points. An extensive list of source reference is given at the end of the book.

To this reviewer two features have always stood out in this work and have distinguished it from other anatomical atlases: (1) The observations and comments that accompany the illustrations and which are designed to call attention to points of anatomical significance and (2) the great attention paid to variations and anomalies, often including the frequency of their occurrence. Both these features bespeak the pedagogical wisdom and experience of the author. The work is highly recommended to all students of anatomy at whatever level. It would be of particular benefit to house officers and candidates for specialty board examinations. — *Ernest Lachman, M.D.* □

Ciba Foundation Symposium on **SOMATIC STABILITY IN THE NEWLY BORN**. Edited by G. E. W. Wolstenholme and Maeve O'Connor. Little, Brown and Company, Boston, 1961.

The newly born infant is characteristically unstable. Precise physiologic limits of the instability of the newborn human infant have not, as yet, been determined. In January, 1961, through the cooperative efforts of the Ciba Foundation and the Neonatal Society, twenty-seven international authorities met to discuss various aspects of the "Somatic Stability of the Newborn Infant." Professor R. A. McCance (University of Cambridge) is due special credit for conceiving and directing this conference.

Clinicians, biologists, chemists and physiologists discussed in depth various aspects of anatomic, physiologic, enzymatic, metabolic, biochemical and clinical stability of the fetus and the newly born. This symposium includes especially detailed and informative reviews of carbohydrate metabolism, development and effectiveness of kidney function and endocrine function of the fetus and newborn. In addition, various bio-

chemical and clinical changes occurring during asphyxia and during the respiratory distress syndrome were presented and discussed.

Professor C. A. Smith (Harvard University) had both the duty and the honor of presenting an informal summary of the clinical implications of the proceedings. Although the clinician may find various sections of the symposium extremely detailed, all physicians charged with the responsibility of newborn care may take both comfort and challenge from Doctor Smith's comments. — *Jacob L. Kay, M.D.*

FUNCTIONAL BEHAVIOR OF THE MICROCIRCULATION, by Benjamin W. Zwiefach. Springfield, Illinois, Charles C. Thomas, 1961, \$7.00, pp. 149.

This small book (149 pages) mainly presents a summary of the author's works and beliefs concerning the microcirculation. Each chapter is followed by references to the works of others but their numbers do not appear in the text. The descriptions of the anatomy of the microcirculation in different regions are particularly well done. Included in the descriptions are the artery, arteriole, metarteriole, thoroughfare capillary channel, precapillary sphincter, true capillary, venule, vein, shunts, endothelium and innervation. Other sections of interest are the reactivity of various vessel types to nervous stimuli and to topically applied vasoactive agents. The author also considers capillary permeability, transcapillary exchange, local tissue injury, experimental shock, circulatory homeostasis and functional behavior (regulation of peripheral flow). The book is recommended for those with a particular interest in the anatomy of the microcirculation. — *Francis J. Haddy, M.D., Ph.D.* □

THE EXERCISE ELECTROCARDIOGRAM IN OFFICE PRACTICE, by F. Grey Dimond. Springfield, Illinois, Charles C. Thomas, 1961, \$10.00, pp. 169.

This electrocardiographic text and atlas dealing with the specialized

problem of the diagnosis of ischemic heart disease by means of an exercise electrocardiogram or "Masters test" has been masterfully put together by Doctor Dimond. A particularly useful portion of the text is that concerning the distinction of the truly abnormal tracing diagnostic of ischemic heart disease from the "false positive" or "innocent variant" type of tracing using the QT interval as a guide.

The photographic presentation of the electrocardiographic material is certainly adequate if not excessive, and is of good quality with not only the tracing being clear, but also the rule markings of the electrocardiographic paper.

This is, I believe, the best available compendium covering this subject today and offers to the practitioner the best in "expert consultation." — *Thomas N. Lynn, M.D.* □

MENTAL HEALTH ADMINISTRATION

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spend money on fixing up fancy barns rather than developing a needed out-patient clinic. Such is less likely to happen with physicians in authority, though there are instances where incompetent less-dedicated physicians have done such things.

It has been said that, if a lay administrator were in charge, physicians would have more time for patient care. The reverse would be true. The lay administrator due to his own lack of knowledge would take up more of the physician's time. The physician would also waste much time persuading the administrator to support some project he feels is worthwhile. With the medical administrator in charge, he can delegate many business functions to his business manager and other administrative personnel, and yet by following the "exception principle" can remain on top of the entire operation. □

T. Glyne Williams, M.D., Director, Department of Mental Health and Mental Retardation, State of Oklahoma; Associate Professor of Psychiatry, University of Oklahoma School of Medicine.

DEATHS

PETER E. RUSSO, M.D.
1904-1963

President-elect of the Oklahoma State Medical Association, Peter E. Russo, M.D., died March 13, 1963 in Oklahoma City. Doctor Russo would have succeeded J. Hoyle Carlock, M.D., as president of the association in May.

A native of Italy, Doctor Russo completed his medical education at St. Louis University School of Medicine, where he received his degree in 1930. For ten years he was in general practice in Cleveland, Ohio. In 1941, he came to Oklahoma City where he took three years of specialty training in radiology.

In addition to his private practice, Doctor Russo held many teaching appointments at the University of Oklahoma School of Medicine, including the chairmanship of the Department of Radiology from 1949-1957. Later, he was appointed Professor of Radiology at the school.

Among his professional society affiliations were the American Board of Radiology, the American College of Radiology, the Radiological Society of North America (vice-president—1956), the Rocky Mountain Radiologic Society (president—1960-61), the American Roentgen Ray Society, the Oklahoma State Radiological Society (president—1948-49) and, the American Society of Nuclear Medicine (president—southwestern chapter—1959-60).

He had served as vice-president of the state association in 1961-62.

GRADY F. MATHEWS, M.D.
1889-1963

Grady F. Mathews, M.D., retired Commissioner of the Oklahoma State Health Department, died March 18, 1963 in Oklahoma City.

A native Texan, Doctor Mathews graduated from the University of Oklahoma School of Medicine in 1925. He served as head of the health department from 1939 until his retire-

ment in 1960. At the time of his death he was acting consultant to the health department and Associate Professor of Preventive Medicine and Public Health at the University of Oklahoma School of Medicine.

Doctor Mathews was credited with many accomplishments during his 21 years as health commissioner including the creation of the state board of health, a state milk law, food and drug law, licensing of water and sewage operators, sanitarians registration act, radiation control act and successful fights against several contagious diseases.

He was a member of the American Public Health Association and served as vice-president of the State and Territorial Public Health Officers' Association in 1959.

The Oklahoma State Medical Association paid homage to Doctor Mathews for contributions both to his profession and in the field of public health during the annual meeting of the group in 1960.

HERBERT A. WILSON, M.D.
1895-1963

A long-time McAlester physician, Herbert A. Wilson, M.D., died March 7, 1963.

Born in Wister, Indian Territory, in 1895, Doctor Wilson graduated from the University of Arkansas in 1929. He began his first medical practice in Wister in 1931, moving to McAlester a short time later.

He was a veteran of World War II, having served with the 45th Division in France and Germany.

Included in Doctor Wilson's medical affiliations were his membership in the American Association of Physicians and Surgeons and the Southwestern Medical Association.

ROY J. MELINDER, M.D.
1914-1963

Roy J. Melinder, M.D., a 48-year-old Claremore physician died March 1, 1963.

Born in Wyandotte, Oklahoma in 1914, Doctor Melinder graduated from the University of Tennessee School of Medicine in 1933. After serving his internship at St. John's Hospital in Tulsa, he established his practice in Claremore.

Doctor Melinder was active in civic and medical affairs, having served as president of the Roger-Mayes County Medical Society.

WILLIAM W. COTTON, M.D.
1907-1962

William W. Cotton, M.D., Poteau surgeon, died November 11, 1962.

Born in Sallisaw in 1907, Doctor Cotton graduated from the University of Oklahoma School of Medicine in 1935. His practice, established in Atoka in 1941, was interrupted when he served as a Captain in World War II. Following postgraduate work in Chicago, he established his practice in Poteau in 1949.

Active in both medical and civic affairs, Doctor Cotton had been Mayor and President of the Chamber of Commerce in Atoka.

An Honorary-Life Membership showing the esteem of his fellow practitioners, was approved for Doctor Cotton during the 1962 annual meeting of the Oklahoma State Medical Association.

RAY B. GRAYBILL, M.D.
1920-1963

Ray B. Graybill, M.D., Ardmore internist, died March 13, 1963 in Oklahoma City.

Born in Ashland, Kentucky in 1920, Doctor Graybill graduated from Temple University School of Medicine in 1946. He established practice in Ardmore in 1951.

Doctor Graybill had recently been appointed to the Board of Directors of Oklahoma Blue Cross and Blue Shield. He was also a member of the Oklahoma Heart Association Board of Directors.

Miscellaneous Advertisements

LOOKING FOR a G.P., or an M.D., not averse to doing G.P., as a Locum Tenens for two or three months this summer, while I am on short term medical mission service. Will furnish comfortable home and office, rent free, and will give all net proceeds from practice. Ideal situation for man finishing residency and awaiting assignment to service. May be able to adjust time to suit applicant's situation. Contact A. C. Hirshfield, M.D., 908 N.E. 50th Street, Oklahoma City 5, Oklahoma.

BOARD ELIGIBLE pediatrician, native Oklahoman, desires practice opportunity in state; available September 1, 1963. Contact J. P. Reimer, M.D., 4245 Mountain Village, Mountain Home AFB, Idaho.

WELL ESTABLISHED doctor in dire need of an associate. A young general practitioner wanted. An industrial oil supply center town of about 100,000 population. Present associate leaving for specialization. May start on salary, percentage, interest, or any way desired without any expense. If interested, address inquiry to P.O. Box 3669, Odessa, Texas.

GENERAL practitioner desires location in Oklahoma, population of town unimportant. Graduate of University of Tennessee School of Medicine in 1948. Contact Horace D. Farthing, M.D., Box 116, Ft. Supply, Oklahoma.

PHYSICIAN, presently interning, desires Oklahoma location to establish private practice. Contact Earl B. Gehrt, M.D., Broadlawns Polk County Hospital, 18th and Hickman Road, Des Moines, Iowa.

BOARD ELIGIBLE (OB-GYN) physician desires group practice in city over 50,000. 1952 graduate of Harvard. Contact Ben Z. Taber, M.D., 4900 Marie Tobin, El Paso, Texas.

GENERAL Practitioner needed in Guymon, Oklahoma, in association with three-man general practice group. Good salary to start, with partnership later. Contact Medical Arts Clinic, 421 E. 13th, Guymon. Tel. 338-6506.

EXCELLENT OPPORTUNITY in McAlester, Oklahoma, to take over lucrative practice of deceased physician. Equipment and office furnishings may be sold separately. Contact Presley Brown, L.L.B., 1st and Grand, McAlester. Ph. GA 3-0294.

WATONGA CLINIC, Watonga, Oklahoma (population 3,500) wants to add general practitioner to present four-physician group. Clinic building less than four years old. Guaranteed salary first year, with subsequent option to become partner. Cattle, agricultural economy. Large trade territory. Contact A. K. Cox, M.D.

WANTED internist, board certified or eligible. Group practice opportunity in expanding community. Write Administrator, The Chickasha Clinic, Box 1069, Chickasha, for complete details. Inquiries kept confidential.

BECAUSE of our loss, by death, of Drs. M. L. Henry and R. A. Harkins, we need two doctors to join our group. Excellent opportunity for general practitioner and board certified specialist in medicine, surgery, E.E.N.T., or pediatrics. Call or write E. D. Greenberger, Medical Arts Building, McAlester, Oklahoma.

WANTED young general practitioner to join two other G.P.'s and surgeon in suburb of Dallas, Texas. Attractive working conditions, good town, schools, and churches. Salary at first—with partnership, eventually. No investment required. Contact Geo. W. Apple, Jr., M.D., P.O. Box 158, Plano, Texas.

WOULD LIKE to buy examining room equipment and office furniture. Contact Key C, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

GP ASSOCIATE wanted in new clinic in Hollis, Oklahoma. Population 3,000. One block from new 31-bed hospital. Contact David Fried, M.D., Box 72, Hollis, Oklahoma.

NEWLY REDECORATED office space near hospitals, 436 N.W. 13th Street, Oklahoma City. Telephone CE 5-6461 or JA 5-2008.

Resolution 33

(Continued from Page 191)

WHEREAS, the Council on Medical Education and Hospitals of the American Medical Association has recommended that house staffs should be composed of at least 25 per cent graduates of U.S. or Canadian Schools, but has further encouraged all hospitals to use some foreign graduates in house staff capacities;

NOW THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association approves the recommendation for a 25 per cent minimum of U.S. or Canadian graduates; and

BE IT FURTHER RESOLVED, that a hospital should not be rated downward for accreditation if it does not have any foreign graduates on its house staff.

THE DREAM of using specific drugs to treat infections of the human body is ancient. Quinine for malaria was the only well known, worthwhile drug until Paul Ehrlich produced arsphenamine for syphilis in the late nineteenth century.

Then sulfonamides burst over the medical horizon during the 1930's. Their initial effect on infections was so dramatic that for a while men thought themselves close to a permanent cure for inflammatory diseases with this great class of chemical compounds. Grateful patients properly called them wonder drugs.

Penicillin's discovery came close on the heels of the sulfonamide revolution in medical practice. Streptomycin, tetracycline, chloramphenicol and the many other mold products that followed in its wake were even more startling in their therapeutic effect compared to the old fashioned methods of treatment. They seemed to deserve the term miracle drugs.

Such good fortune was almost too much for the world and its physicians. Pneumonia, tonsillitis, gonorrhea, syphilis, furunculosis, peritonitis and most wound infections were dispatched in short order. Patients learned to be disappointed when their infections failed to clear in two or three days. Their doctors too, felt that if one drug did not relieve the condition quickly it was only a matter of finding the right compound, as simple as finding the proper key to a lock.

Most physicians in practice today grew up during this emphasis on the drug treatment of infections. For nearly thirty years each new chemical discovery seemed to promise the solution of certain infections until further experience proved the rule that time tempers enthusiasm.

Almost instinctively we have come to think that any disease-producing germ can be eradicated if its host is given a "specific" for that organism. With streptococci we think of penicillin, with tubercle bacilli we think of streptomycin and with colon bacilli we think of sulfonamides. For every germ there is usually a recognized, recommended drug that is effective *in vitro*.

The human body received little attention during most of the antibacterial agent era.

The term, antibacterial agent, itself even suggests a kind of passiveness on the part of the human with an infection. Doctors have known all along that a single person harbors more "harmless" germs in his body than there are people on earth but the potential danger of these bacterial hordes with their fantastic rate of reproduction seemed to be more than offset by man's possession of a brain.

Bacteria are no match for man on an individual basis but at a *cellular* level it appears that the contest is not nearly so unequal: Bacteria are so numerous and can multiply so rapidly that when genetic mutation is considered the odds are probably in the germ's favor. New pathogens are being discovered, more sub-species of sub-species are being identified and resistant strains of the old standbys are appearing faster than man can discover new drugs. No one has destroyed any group of bacteria completely and in some areas old bacterial friends have become dangerous enemies through man's production of an inhospitable, though not impossible environment.

When the current generation of physicians meets a "modern" germ, virulent and resistant to all known antibacterial agents he is embarrassed to fall back on the primitive remedies of rest, elevation, hot packs, drainage and other *supportive* measures. It seems to be admitting defeat, as though his recent labors and apparent brilliant success with chemotherapeutic agents were wasted. Fortunately his drugs have not yet produced a bacterial Frankenstein but the germs seem to be winning the chemotherapeutic round which at the beginning gave such promise of an overwhelming victory.

Medical science is putting on its thinking cap again and the germs may not win the fight after all. During the last three decades physicians have learned that chemical agents are a useful weapon in the battle against infection but they are beginning to remember that the human genus survived into the twentieth century because it had already

certain defense methods of its own long before medicine became a profession. We call some of these defenses innate resistance, acquired immunity or symbiosis but we know little more about them beyond the fact that they exist.

These natural defense mechanisms and how to help them cry out for more study. "Cellular reaction" and "humoral response" are not much more helpful or better understood terms than the four cardinal humors of Medieval physicians.

Medicine is leaving the antibacterial agent era and girding its loins for another bout with germs. We see the problem in a different perspective after these years of experience and we have learned that a man should never underestimate his opponent. With renewed emphasis on the human host's capacity to overcome bacterial invasion the outcome may be more favorable.—C.B.D. □

The Young Doctors

THE ASSOCIATION of American Medical Colleges estimates that to maintain the present ratio of one doctor per every 740 Americans, medical schools must graduate 10,500 doctors a year by 1975. If drop-outs are taken into account, this would mean that 11,700 medical school freshmen would be admitted by 1971. This is about 3,200 more medical students than were admitted to the qualified medical schools in this country in the fall of 1962. These figures confirm the well publicized probability of a great shortage of medical doctors in the next decade. It is indeed a paradox then that the number of applicants for entrance into medical schools has been steadily decreasing over the past five years, until the fall of 1962, when a slight upturn was recorded.

This paucity of applicants has been attributed by many to the high cost of medical education and the length of the course, to which the extended training periods for specialists are added. But if this were true, it would be expected that the number of applicants to medical schools in Great Britain would have dropped alarmingly with the advent of government financed medical care which has cut back physicians' incomes

across the land. However, there has been no dearth of young men applying to the medical schools in England. So it is doubtful that economic factors can explain away all the problem. And it is not reasonable to expect that the Kennedy Administration can suddenly make thousands of would-be doctors appear for application to medical schools by merely making the financing of their education a government subsidy. But granted that the economic factor is a deterrent, the profession itself is striving mightily to entice more and better students into the medical schools through loans and scholarships. Thus, the AMA last year established a loan guarantee program under which medical students, interns and residents can borrow as much as \$10,000 over a seven year period, and to date has guaranteed more than 5,000 such loans, totaling some \$9,300,000, with new loan requests coming in at the rate of about 140 a week. The Oklahoma State Medical Association has its Scholarship and Loan Fund for the University of Oklahoma School of Medicine in its second year of operation and adds some \$8,000 to the Fund each year. The endowed schools offer considerable in the ways of scholarships.

So there must be something more which is not so easily definable that has dulled the appeal of medicine as a career. Doctor Edward D. Churchill in the Frank H. Lahey Memorial lecture in Boston last September has brought this to the doorstep of the individual doctor. "On all sides I sense an apologetic self-derogatory mood in the profession and a lack of the conviction that should uphold the dignity and importance of the position of medicine in contemporary culture," says Doctor Churchill. "I am both annoyed and indignant when I hear . . . panels assembled to discuss the so-called 'tarnished image' of the doctor. I am proud of being a doctor—I am proud of being a surgeon. It is time this self-conscious and self-abasing trend was reversed and the doctor's dignity reasserted, for in Kipling's words, 'He is among the most important people of the world.' Mankind itself needs the wisdom of talented young men in medicine as never before. And to doctors everywhere I say, Hold your heads high, cultivate professional dignity and self-reliance and be patient with the frailties of man." □



The trite expressions of gratitude, humility, and feelings of responsibility upon accepting the office of the presidency may seem stultified by their repetitions, yet no predecessor has expressed them with more sincerity than I wish to convey to you at this time. I can only assure you of my best efforts.

In approaching the problems that lie before the profession and the nation, an orderly analysis and organization of actions should precede the implementation of the actions. In so doing it becomes necessary to focus our attention on many of the events that have transpired during the past thirty years, to bring us to the present state of affairs. This is our only excuse FOR LOOKING BACKWARDS.

And, in analyzing our present status, we must be as objective as possible and arrive at as realistic a conclusion as it is within our power to do. We, too, will find ourselves faced with more than one "agonizing reappraisal" of the facts at hand. But facts are facts, and a fait accompli is water under the bridge. THIS IS 1963! All future progress starts now—not with things hoped for nor battles lost. We dare not waste time and energy crying about how much we have lost. If we ever have any hope of regaining some of these losses we must first stop further losses.

In the meantime, we as a profession are dedicated to bring to the people the best possible medical services. As an unstated corollary to that premise we might well add "under the circumstances," for certainly that is the situation that prevails today. We are not happy for the circumstances and that is precisely what is referred to as "water under the bridge." Is our image being clouded by a public concept that the medical profession is a group of cry babies for the "good old days"?

Success or failure in future progress depends first and foremost upon an informed and embattled personnel, both within the profession and the allied arts as well as the general public. Each of us must assume our portion of this burden. We in official positions, from the top to the bottom, must bear the brunt of initiating and activating an educational program. The problems must be defined. The plans of action must be outlined. The means for action must be provided. And every individual must act.

Our first battle is a battle against apathy and inertia. Again let us be realistic on that point, is it apathy? Or is it a feeling of defeatism in the face of so many losses already sustained? If it is apathy, let us get awake. If it is defeatism, let us be aware that many battles may be won or lost before the war is decided. The most important battle is the last one. That is the one we dare not, and must not lose. That one has yet to be fought. Let us go to work on 1963 problems with a 1963 attitude! □

Joe L. Quet, M.D.

Lip Reconstruction

DAVID WILLIAM FOERSTER, M.D.
GEORGE H. KIMBALL, M.D.

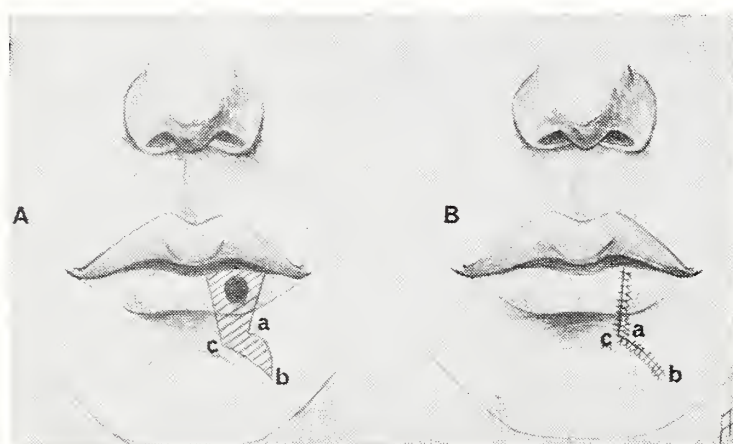
A systematic approach to the repair of lip deficits is presented.

IMMORTALIZED BY Leo Durocher, distorted by Ubangis and placed in perpetual motion by Ladies' bridge clubs, the lip is indeed a strange and wonderful structure. What other piece of anatomy can toot a horn, whistle a tune, propel tobacco juice, or whisper a secret as well as fulfill an important role in eating and speaking? Such versatility results from a combination of structural factors: The water-proof mucous membrane lining, the encircling musculature with its diaphragmatic function and the soft

pliable outer covering of skin. It is easily concluded that these three components must be present in tissue available for satisfactory surgical reconstruction.

The problem then is to secure such tissue. The simplest method, of course, is to re-match lip to lip following a tissue loss. Since the lower lip is approximately one-fourth again as long as the upper lip this is a most satisfactory repair for small lower lip defects following tumor excision, trauma, etc. We prefer a modification of the standard V-lip excision as shown in figure 1. This breaks up the linear pull with resultant notching often seen as a sequel to the standard technique. Care must be taken to make both sides of the defect equal in length so that there is no bulging of dog-ear distortions. Mucous membrane is closed with a running suture of 5/0 chromic catgut. Muscle layers are then carefully approximated with interrupted sutures of 5/0 white braided nylon and the skin closed with interrupted 5/0 monofilament nylon in adults or 6/0 in children. Great care must be taken to match the white line at the junction of the vermillion border and skin to the opposite side. Even a millimeter offset here will be apparent later and give an irregular appearance to the vermillion contour. This is particularly true in children due to their growth potential.

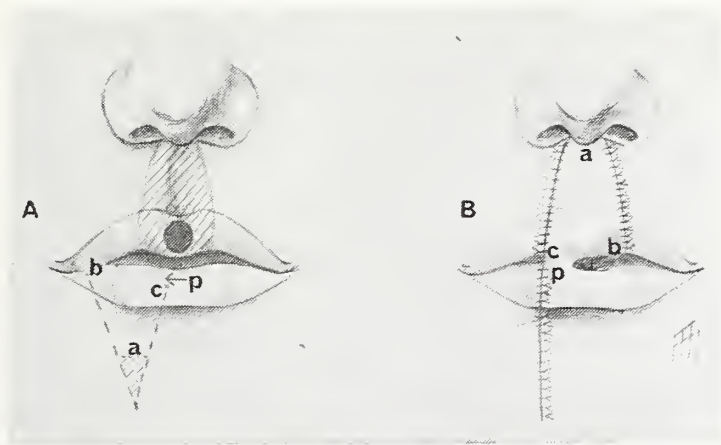
The next most efficient method of rebuilding lost lip is the use of pedicled lip flaps. Defects which can be closed primarily when the lower lip is lost are often too large when present in the upper lip. Consequently the redundancy of the lower lip can once again be put to use, this time by flap-switching



MODIFICATION OF V-LIP PROCEDURE

Figure 1

A. Shaded area indicates portion of lip to be excised. Note that ab is the same length as cb. This allows smooth closure of surgical defect. B. Closure has been completed. Note that vertical scar contracture would be broken up by angulation at c.



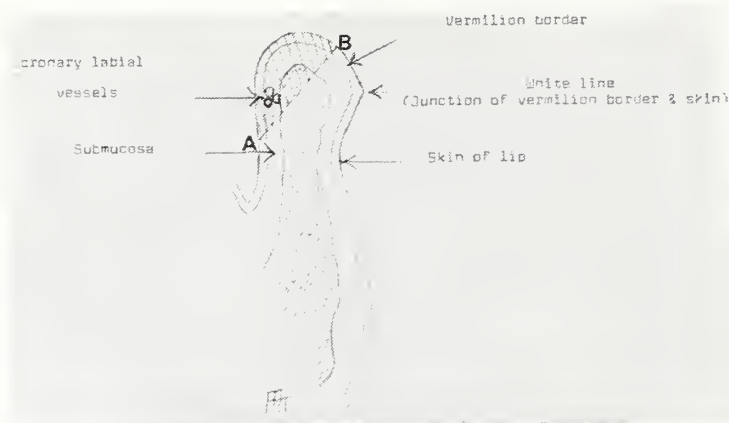
STEIN-ABBE ROTATION FLAP

Figure 2

A. Central upper lip lesion excised by shaded area. Lower lip flap is raised by through and through incisions along dotted lines, care being taken to preserve coronary labial vessels at pedicle p. Tip of flap, represented by shaded area below a, is excised for better configuration to defect. B. Flap has been rotated and sutured in layers. Two weeks later the pedicle will be divided and the vermillion border smoothed and adjusted.

techniques. The most simple and widely used procedure is construction of a Stein-Abbe or Stein-Estlander flap (figures 2 and 3).

These flaps are based on a narrow pedicle containing the coronary labial vessels. Because of the rich anastomoses present large flaps with such small pedicles can be safely raised and rotated in one operation. One must be cognizant of the location of the coronary labial vessels, however, lest they be severed while raising the pedicle. They run in the submucosal layer of the posterior lip at about the same height that the white line



CROSS SECTION OF LOWER LIP

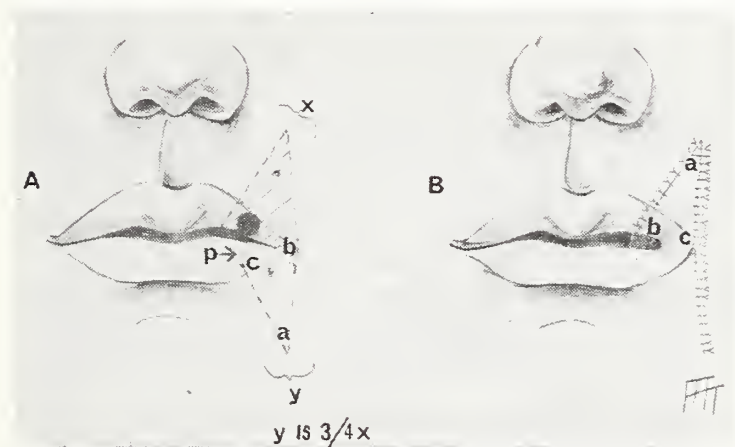
Figure 4

Cross section of lip shows relationship of coronary labial vessels to white line of vermillion-skin junction. Note that they are approximately the same height. Dotted line at B represents upper limit of excision with striped area being pedicle on which flap rotates.

of the vermillion border does anteriorly. Thus a very small pedicle can be achieved by an oblique cut as shown in figure 4. This is desirable since there is less distortion following rotation of the pedicle (figure 5). In case these vessels are severed accidentally all is not lost because the collateral blood supply is often sufficient in the remaining pedicle to maintain viability. Such a method, however, is not recommended!

In order to achieve balance and symmetry of the mouth and lips the lower lip flap should be approximately three-fourths the width of the upper lip defect. If upper lip is used to replace lower lip losses it should be one-half as wide as the defect. The vertical height of the flap, however, should be the same as the defect and it should have the same general configuration as the defect.

After a period of two weeks the pedicle of the Stein-Abbe flap may be divided and



STEIN-ESTLANDER ROTATION FLAP

Figure 3

A. Lateral upper lip lesion excised as seen by shaded area. Dotted line indicates through and through incision for rotation flap. Coronary labial vessels contained in pedicle at p. Note that cb or y is three-fourths as wide as the upper lip lesion or x. B. Flap has been rotated, the white line carefully matched, and the lip repaired in layers. Note the rounding of the commissure at c which will require a second procedure.

David William Foerster, M.D., a 1958 graduate of the University of Oklahoma School of Medicine, limits his practice to his specialty, plastic surgery.

George H. Kimball, M.D., graduated from the University of Oklahoma School of Medicine in 1926, where he is now Clinical Professor of plastic surgery. He is certified by the American Board of Plastic Surgery.

Doctor Kimball is a Fellow of the American College of Surgeons, a Fellow of the International College of Surgeons, the Southwestern Surgical Congress and the Society of Plastic and Reconstructive Surgery.



Figure 5

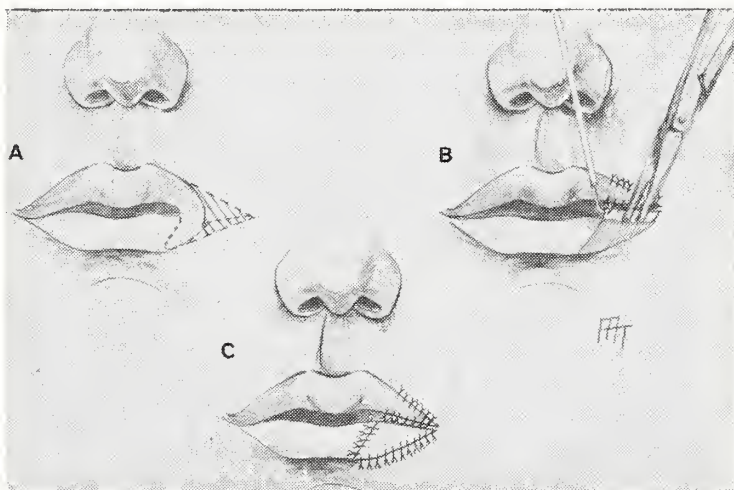
A. Eleven-year-old boy with partially repaired bilateral cleft lip defect. There is moderate shortening of the lip with notching. B. Stein-Abbe flap just before division at 14 days. Note the small vermilion pedicle and the cupid's bow formed by the pedicle flap. C. Two weeks post-operative division of pedicle. Upper lip has good length and lower lip does not appear to suffer from robbing Peter to pay Paul.

the vermilion border revised. If necessary the pedicle may be divided as early as eight days since the flap quickly picks up a collateral blood supply from adjacent lip tissue. Following rotation of a Stein-Estlander flap division of the pedicle is not necessary be-

cause it does not cross the mouth. The corner of the mouth is usually rounded, however, and after six to eight weeks it is usually necessary to perform a commissure revision. We prefer the Gillies technique seen in figure 6. This restores the acute angulation to the corner of the mouth and gives a good cosmetic, as well as functional, commissure.

As larger and larger lip defect problems are encountered it becomes increasingly more difficult to find suitable replacement material. The cheeks are available as the only source of reasonably ideal replacement tissue and, although not so desirable as lip tissue even total lip reconstruction can be accomplished with good results (see figure 7).

When neither lip nor cheek is available it is necessary to import tissues from other regions for replacement. The resultant lip suffers from flabbiness and insensibility hence it is less satisfactory than use of adjacent tissue containing mucous membrane and muscle. These imported lip flaps must be lined by a second flap, free skin grafts or by folding the distal portion back on itself. The latter type of flap seems to work better especially if bone grafting is anticipated later where it contains a natural "pocket" for placement of bone. Illustration of such a technique is seen in figure 8. Besides the



GILLIES COMMISSUROTOMY

Figure 6

A. Shaded triangle of skin is excised and incision made through orbicularis oris musculature along the dotted line. Vermilion border of lower lip incised along dotted lines and freed from lower lip musculature. B. Vermilion border from lower lip has been sutured into place to reform upper lip laterally. Mucous membranes behind lower lip are undermined and brought anteriorly. C. Mucous membranes then sutured over lower lip forming new vermilion border. Commissure is now sharply angulated rather than rounded and mouth has regained its full width.

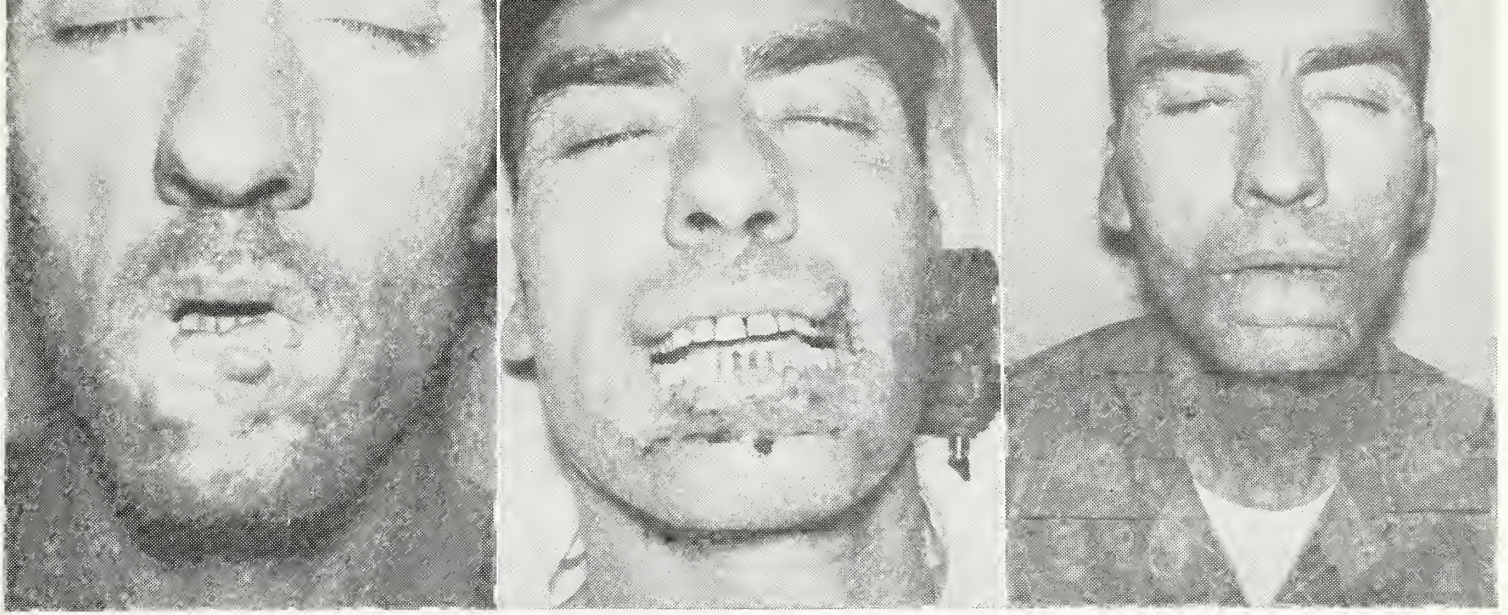


Figure 7

A. Thirty-nine-year-old man with a large squamous cell carcinoma involving the entire lower lip and extending laterally into the lower cheek regions. B. One week following wide excision of tumor. Wider excision was necessary to clear edges of tumor cells. C. Lower lip reconstructed from bilateral cheek flaps. Vermilion border will later be formed by sliding forward the mucous membrane lining on the posterior aspect of the new lip.



Figure 8

A. Thirty-two-year-old man one month after shot-gun wound of central face. Mucous membranes have been sutured to skin. In addition to soft tissue losses of central face there is also loss of portions of the mandible, maxilla, palate and nasal bones. The configuration and function of the mouth have been virtually lost. The patient has tracheostomy. B. Formation of thoraco-axillary flap to replace soft tissue loss of lower face and lip. Distal portion of pedicle has been cut under thoracic portion. C. Pedicle has been attached to lower face and divided. Upper lip was reconstructed from cheek flap. Later mucous membrane flaps will be used to form vermillion border on lower lip. This will enable the patient to have a lower lip with tactile sensibility. Mandibular graft and reconstruction of nose will then be completed with defatting and reshaping of lower lip and chin pedicle. Palate loss will be restored by obturator.

anterior chest and neck regions, flaps can be brought in from the forehead and upper back areas. We prefer the former since it is more readily available and less disfiguring.

In summary:

There was an old man of Yin
Whose lip was gone from his chin,
It will quickly regrow

From two flaps, I know,
And a little ol' dabble of skin.

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Pasteur Building, Oklahoma City, Oklahoma

Protection Against Thermal Burns from Nuclear Weapons

J. RAYMOND HINSHAW, M.D.
Doctor of Philosophy, Oxford

Many nuclear weapons produce more injuries from thermal burns than from blast and ionizing radiation. A number of ways to protect against or to minimize the effect of this thermal energy are described.

NUCLEAR WEAPONS differ from conventional explosives in several important respects: (1) Nuclear weapons can be many times more powerful than conventional detonations. (2) The nuclear explosion is accompanied by highly penetrating and harmful invisible rays called "the initial nuclear radiation." (3) Substances remaining after a nuclear explosion are radio-active and this is called "residual nuclear radiation." (4) A fairly large proportion of the energy in a nuclear explosion is emitted in the form of light and heat, generally called "thermal radiation." The first three—difference in size and the occurrence of initial and residual ionizing radiation—are well known. The thermal radiation from nuclear weapons has been less widely publicized, however, even though in many circumstances it can cause more injuries and deaths than can the ionizing radiation.

This paper deals with some aspects of thermal burns from nuclear weapons. It mainly describes the effectiveness of various methods of protection against the thermal radiation.

METHODS

The experimental work on which much of this paper is based was carried out by the

author and his co-workers at the University of Rochester Atomic Energy Project or at the sites of nuclear weapons tests. The experimental animals were young Chester White pigs anesthetized with intraperitoneal Dial with urethane.* Pigs were selected because their skin closely resembles human skin. Some of the work was carried out on human volunteers.

The main heat source for the laboratory experiments was a modified 24 inch Army carbon arc searchlight.¹ A rotating, slotted wheel between this source and the experimental animal made it possible to simulate the thermal pulse of nuclear weapons.² For some types of experiment it was necessary to use burning magnesium flash powder as the heat source.

Details of experimental design, evaluation of effect, and statistical analysis of the data varied depending on the nature of the experiment. They have been described in many publications from our laboratories and need not be repeated here.

THERMAL RADIATION FROM NUCLEAR WEAPONS

A few facts about nuclear weapons, especially about the thermal radiation from them, will illustrate what we are trying to protect ourselves from. The power of a nuclear weapon is expressed in terms of energy release or yield when it explodes compared with the energy liberated by the explosion of TNT. We speak, therefore, of a one kiloton weapon when we refer to one with the power of 1,000 tons of TNT and of a one megaton weapon when we mean one with the power of 1,000,000 tons of TNT. For reference, it should be kept in mind that the two weapons dropped on Japan were about 20 kilotons.

*An anesthetic agent for animal experimentation kindly furnished by Ciba.

For weapons detonated in the atmosphere below an altitude of about 100,000 feet, we can say that approximately one-third of their total energy will be received as thermal radiation. The instant of explosion a temperature described as "several tens of millions of degrees" is reached. However, it is so brief in duration that it does not cause thermal destruction. A fireball is then formed; the size and brilliance of the fireball, the time it takes to reach its maximum size and the time it produces significant thermal radiation vary with the size of the weapon. A 20 kiloton weapon has caused a burn as severe as it will cause in 0.3 seconds from the time of explosion, but very large weapons deliver their thermal energy over several seconds.

It is estimated that 90 per cent of the people who sought medical attention during the first week following the atomic bombings in Japan did so because of thermal burns. Most of these burns were thought to have been due to thermal radiation from the bombs; some were the result of flame burns from the many fires produced by this thermal radiation. As the size of the weapon increases, the area affected by thermal radiation increases much faster than does the area subjected to significant ionizing radiation or blast effects. As a result of this, a very large weapon which can deliver 100 roentgens over an area of 100 to 200 square miles will cause second degree burns in an area up to 3,000 square miles.

The amount of thermal radiation received is chiefly dependent on the size of the weapon, the distance from ground zero and the manner in which the weapon is detonated. To a lesser extent it is dependent on cloud cover and other atmospheric conditions. How these factors affect protection from the thermal radiation will be described.

PROTECTION AGAINST THERMAL BURNS

1. *Natural barriers*

Any solid, opaque material, e.g., a wall, a hill, or a tree, between a given object and the fireball acts as a shield and will provide protection of that object against thermal radiation. Transparent materials, on the other hand, such as glass or plastics, allow thermal radiation to pass through only

slightly attenuated and provide virtually no protection. In trying to protect ourselves against *ionizing* radiation we must be concerned with the thickness and the composition of the wall between us and the site of the detonation. It is much easier to protect ourselves against *thermal* radiation. If the wall shuts out light, it will stop thermal radiation. If the wall does not catch fire, it will protect us. Under most conditions the thermal radiation travels in a straight line. It is, therefore, not necessary to be completely surrounded by a protective wall or hill; it is enough to have that opaque object between us and the fireball.

The effect of some atmospheric conditions depends on such things as the height and density of the clouds, the height of the detonation, and the presence or absence of fog. It is enough to know that fog and particularly a smoke screen can afford significant protection.

2. *Temperature*

A cold temperature works in two ways to protect against thermal radiation. In cold weather we wear several layers of heavy clothing and, as will be shown subsequently, this can afford much protection. The second, less important but still significant reason cold weather provides protection is that it takes more energy to burn cold skin than it does to burn warm skin. To cause a burn the tissue must be brought up to at least 45° C. for a prolonged period of time or to a higher temperature for a shorter time. The colder the skin, the more energy it takes to raise the tissue to these destructive temperatures.

3. *Clothing which we wear*

When we are outdoors the most important protection against thermal radiation likely

A graduate of the University of Oklahoma School of Medicine in 1946, J. Raymond Hinshaw, M.D., has been certified by the American Board of Surgery. He is Assistant Professor of Surgery at the University of Rochester School of Medicine.

Doctor Hinshaw is a member of the Central Surgical Association, the Society of University Surgeons, the American Society for Experimental Pathology and the American College of Surgeons

to be readily available is our own clothing. How much protection does clothing afford? Depending on the factors to be described, clothing can increase the severity of the burn or it can provide absolute protection to the skin from very large quantities of thermal energy.

In only one circumstance does clothing fail to offer at least partial protection. If it catches fire and if the flaming cloth remains in contact with the skin for several seconds, at many levels of energy a worse burn results than if the thermal radiation had fallen on bare skin. However, if the clothing does not catch fire or become molten, any type of clothing affords some protection. Since wool does not flame, it offers more certain protection than does cotton. Cotton can be treated with a flame retardant but such treatment is not yet ideal. Synthetic materials vary in their ability to protect, though some are better than cotton.

Other factors which determine how much protection will be afforded by a single layer of cloth are the weight, weave, moisture content, and color. The heavier the cloth, the closer the weave and the higher the moisture content, the more it will protect. Color plays a most important role. A white fabric reflects much of the thermal energy, thus preventing it from producing a burn. Black fabric absorbs most of the energy; this absorbed energy can set fire to the clothing or can heat it to the point that it will produce a burn. Some of the energy is transmitted through any type of cloth and this transmitted energy may, of course, burn the subjacent skin.

Multiple layers of clothing offer considerably more protection than does a single layer. For example, two layers of four ounce cloth offer more protection than does a single layer of eight ounce cloth. An air space between the two layers or an air space between the cloth and the skin increases the protectivity many times. Because of the protection which comes about with multiple layers of cloth, with heavy cloth and with air spaces, a person dressed for outdoors during cold, winter weather can be considered completely protected from thermal radiation over the clothed areas of his body.

Although clothing protects the skin, it may itself be destroyed by the thermal radiation. If clothing is destroyed or seriously damaged by a nuclear explosion, what happens if one is then exposed to a second detonation? It then protects less or not at all. This points out the importance of the next protective device to be discussed.

4. *Clothing or fabric used as a shield*

Any cloth—a sheet, a raincoat, a poncho, a gas cape for example—which can be held in front of one a few inches or which can be thrown over one to form a crude tent offers great protection not only to the exposed parts of the body but also to one's clothing. From the standpoint of protection only, a white, heavy fabric which would not flame would be ideal for this purpose. However, anything available should be used. (If I had a chance to make my own shield I would do so by placing a white sheet on the outside and a wool blanket toward me.)

5. *Other protective devices.*

Hats or caps with long bills to shade the face, shades for the eyes, gloves and half gloves for the hands and creams to be spread on any exposed area of skin have been tried. As we would expect, anything imposed between the bare skin and the detonation offers some protection if it does not catch fire. At present all the methods mentioned are practical and useful except the protective creams. They are of limited value because they must be put on the skin in a thick layer to be effective; it is difficult to put on such a layer and even more difficult to keep it in place. Also, it is unlikely that very many people would be willing to wear the creams available at this time because they are messy, uncomfortable and unsightly.

6. *Does it help to duck?*

Nuclear weapons of the type used in Japan produce the maximum thermal radiation in a fraction of a second. Smaller weapons radiate their thermal energy even faster. Large weapons, however, radiate appreciable amounts of thermal energy for several or many seconds.

Ducking after the detonation of the smaller atomic weapons offers no protection against the burn. But if it were at all possible to take evasive action during the first few seconds after detonation of a large thermonuclear weapon the severity of the burn

sustained would be decreased. At the very periphery of the effectiveness of such a weapon such evasive action could entirely prevent a burn.

These statements refer to weapons detonated in the atmosphere below an altitude of 100,000 feet, the type of detonation likely to produce thermal burns.

SUMMARY

Nuclear weapons destroy, kill and injure in three ways: By blast, by ionizing radiation and by thermal radiation. Which of the three will cause the greatest number of injuries and the most deaths will depend on the size of the nuclear weapon, where it is used and how it is detonated. In the terrible event that nuclear weapons are ever used in warfare, the ones which would be used and the way in which they would likely be used quite probably would cause more injuries and deaths by thermal burns than by ionizing radiation and blast.

However, if we have any warning at all we can protect ourselves from the thermal radiation. Although we might not be able

to escape injury completely, we could certainly decrease the severity of injury. Any natural or artificial barrier—a wall, a hill, a tree, a piece of cloth—which does not catch fire and produce a flame burn will provide complete or partial protection. Several layers of heavy clothing will, for practical purposes, provide complete protection. A blanket, sheet or other fabric used as a shield or tent will protect not only exposed areas of the body but also the clothing.

In order to make this account both clear and practical I have treated many complex data as though they were simple. Nevertheless, the conclusions are accurate. Although I have offered a number of suggestions for protecting against the effects of nuclear weapons I would like to emphasize once again that the best defense against them is to be elsewhere when they are detonated. □

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An Approach to Elderly Patients for General Physicians

JAMES L. MATHIS, M.D.

Must geriatric patients be incurable burdens? Understanding their feelings and need, may convert a boring task into a rewarding challenge.

A GENERAL PRACTITIONER will not be in practice long before he discovers that a large number of his patients are over 65 years of age. As a physician who entered psychiatry after eight years in general practice, I saw an ever-increasing number of these people. Scientific advances are pushing the life span figures higher and higher.

All results of scientific advances are not positive. In the backwash of forward progress are to be found pools of adverse results. Just as horticulturists might warn against too much insecticide because it not only destroys the insects but also the bird life of the area, so physicians have come to see that the cure of one problem often creates other problems as a by-product. Ironically, when we set out to minimize the physical discomforts of old age, we often add to the individual's greatest problem, that of rejection. We are building up an immense population of elderly citizens, but we are asking them to live in a culture dedicated to youth and youth's rapid advancement—to an age of "the bright young man."

To deny this rejection is only to add to our personal sense of guilt. We tip our hand by our frantic efforts to provide adequate and

free medical care, housing projects and recreational facilities. Even our use of the title, "Senior Citizen," speaks of our guilt as well as our concern. Newspaper and magazine reports of all this interest in geriatrics only serve to intensify the sense of rejection. The aging individual hears himself called a national burden and a social problem.

Grandpa has only to conjure up images of his own youth to note the changes in family mores and customs across the span of two or more generations. Looking at his son's or grandson's home he sees no resemblance between his earlier "serene-before-the-fireplace" concept of a family unit and the picture of modern family living. No longer does grandpa occupy a place of honor before the fireplace; in fact, he and the fireplace have been displaced by the television set. Grandpa cannot cope with the mobility of this modern age and the rapid pace of modern family living. He who cannot cope rapidly finds himself on the shelf.

Nor is it just a case of clear rejection. Many shades of black and white creep in. To a sense of rejection add the realistic fears that come with creeping senility. A man who has been mentally active will be acutely aware of his increasing forgetfulness and the slowing of his thought processes. He will devise many methods of covering these changes, yet often knowing quite well that those changes must be obvious to others. When his denials no longer work he often sinks into periods of depression. These episodes are frequently preceded by agitation which almost amounts to hypomania and

which becomes extremely trying to family members and friends. When we find the hyperactivity and grandiosity combined with forgetfulness secondary to organic brain changes, we have a genuine nuisance on our hands. The nuisance factor in turn seems to invite further rejection. Thus a vicious cycle begins.

It is a contention of the writer, that while this vicious cycle cannot be interrupted entirely, it can be viewed with greater equanimity once it is more fully understood. The majority of these patients look to the general practitioner for help. They bring to him an unending list of physical complaints. Some are curable, many are not. But in either case the understanding practitioner can minister positively to his patient.

Physicians must recognize and accept the fact that although the patients do not expect miracles that will turn back the calendar, they will often leave that impression by being over-demanding if not actually hostile. By this aggressive attitude they are, in effect, objecting to a world which appears to deny them the dignity which they feel they have earned.

While the alleviation of physical ailments will continue to be of major importance, it must be recognized that the end result may be the creation of a greater feeling of uselessness in the aged patient. If you remove the patient's physical disability, in part or in whole, you often remove his mental crutch. No longer does he have a reason for being on the non-productive list. Viewed in this light it is understandable that the patient may need to hold on to a certain amount of physical complaint.

There is a greater need called for in the physician's treatment of the total person. This is the very vivid need for the physician to show a personal interest in the patient and to see him, and to treat him, as another human being, not as a "senior citizen" or a growing "national problem."

Psychiatric training and a large outlay of time are not necessary. In earlier years I was quite often annoyed at over-frequent office visits and requests for home calls from elderly patients. I took it as an affront to my scientific training to be asked to waste valuable time on a patient to whom I had little more to offer and whom I felt could ill

afford extra bills. Eventually I saw that not only were the patients willing to pay but that they were sincerely grateful for the attention given them.

My guilt feelings over charging for listening to a sound heart or taking a never-changing blood pressure caused me to compensate by chatting amicably with them almost to the point of being oversolicitous. To my chagrin and surprise I found that these moments spent in sympathetic conversation produced a greater therapeutic effect than my prescriptions. Even though the physical conditions changed very little or not at all, these elderly people usually become faithful patients and a great source of personal satisfaction.

One might be led at this point to comment that if so little time and effort can become so rewarding that there is actually no problem. Unfortunately this is not true. Physicians, especially the younger ones, are accustomed to seeing dramatic and measurable results. Refusal of arthritic limbs and sclerotic minds to improve is seen as a personal defeat. The young physician's attitude also may be colored by his feeling that "nothing succeeds like success." He may feel that his future success depends upon the visible results he produces in his patients. Such concern for demonstrable results will overshadow emotional factors unless one observes the calm acceptance with which the patient bears these conditions when he feels that someone is interested in him as a person.

Another factor which might preclude a physician having smooth sailing with the elderly patients is the physician's own pre-determined feelings toward them. These feelings depend upon several factors. The physician's early reaction to his own parents

James L. Mathis, M.D., graduated from St. Louis University School of Medicine in 1949. He is now chief resident in psychiatry at the Veterans Administration Hospital and the department of psychiatry at the University of Oklahoma School of Medicine in Oklahoma City.

Doctor Mathis is a member of the American Psychiatry Association, the Alpha Omega Alpha and the Society for Advancement of Science.

and grandparents play a heavy role. Often he is also threatened and frustrated by the knowledge that old age means impending and unavoidable death. Our hypothetical doctor often finds it difficult to accept death as a normal ending to life. Seeing the spectre of death taking small bites out of his patient is a difficult sight for the practitioner to accept.

Older people, like children, are particularly sensitive to the feelings directed toward them. Only the physician who honestly likes, respects and understands them will be able to gain their trust and confidence. This requires that the physician examine his own attitude and conquer his own fears of old age—his own need to deny that he, too, may come to this.

1. The general practitioner will be increasingly involved with geriatric patients.

2. Sympathetic listening and understanding attention are often as helpful as the prescription and stethoscope.

3. The physician must understand the patient's need for physical complaints and the factors behind his over-demanding and sometimes hostile attitude.

4. The physician needs to recognize his own feelings about the irreversible processes of aging and impending death and how these may affect his relation to the patient.

5. These simple factors will turn the chore of caring for the elderly patient into a rewarding experience. □

800 N.E. 13th Street, Oklahoma City, Oklahoma

ONCE BURNED—TWICE CAUTIOUS

Representatives of the United Mine Workers of America were a principal driving force behind recent efforts to pass a pre-paid medical care bill in West Virginia. The *U. S. News and World Report*, in its edition of March 25, 1963, points out some interesting facts about previous UMW ventures into the medical field.

According to the article, most union pension plans are operated on an actuarial basis with trust funds large enough to finance the promised benefits for the lifetime of the retired workers involved. The UMW Welfare and Retirement Fund, however, was set up on a pay-as-you-go basis without accumulating large reserves.

Because of this omission, the article cites the following results:

1. Medical benefits to miners and their families have been sharply curtailed.
2. An estimated 7,000 widows have not received the \$500 death benefits when their miner husbands died.
3. UMW hospitals are in deep financial difficulties—four must be sold by July 1, 1963.
4. The \$100 per month pensions of hard coal miners have been cut to \$30.00.
5. The \$100 per month pensions of soft coal miners have been cut to \$75.00.

These events prompted the hard coal miners to file suit, on March 11, against their own union!

The same union organization had the temerity to urge West Virginia citizens to accept another financially unsound scheme for pre-paid health care programs during the 1963 session of the State Legislature. Proponents insisted upon passage of a bill that would allow pre-paid medical plans which would not require maintenance of reserves on an actuarial basis or which would operate under insurance laws of the State.

On direct questioning at a legislative hearing on this matter, one of the principal sponsors of the bill, Senator William A. Moreland, commented that membership in such plans would be voluntary and, if funds on hand were insufficient to provide expected benefits, the consumer would be free to drop out. What, then, does the victimized miner or other subscriber to such a plan get for his investment after, for example, several years of paying premiums?

The miners and other citizens of West Virginia should have, by now, learned a lesson in regard to financially unsound programs supported by the UMW or any other group. Pre-paid medical care programs, group practice or otherwise, should be permitted by law only if the subscriber is protected by the insurance laws.—From *The West Virginia Medical Journal*, May, 1963. □

Hypokalemic Nephropathy as a Complication of Digitalis Intoxication*

WILLIAM L. HUGHES, M.D.

Case report of hypokalemic nephropathy and digitalis intoxication presenting as preterminal uremia.

IN 1942 two studies were published describing histological changes in renal tubules of animals receiving potassium deficient diets.³ It was not until 1950 that a similar association between low serum potassium and discrete renal tubular changes was made in man.⁵ Since then reports of renal dysfunction due to hypokalemia have appeared with increasing frequency and the clinical and histological findings have become well known. This report describes a case of hypokalemic nephropathy which illustrates some of the hazards of modern medical therapy.

CASE REPORT

Mrs. J. B., a 64-year-old woman, was admitted to the University of Oklahoma Hospital complaining of weakness, malaise, nausea, vomiting and diarrhea for three months. Five years before she had been digitalized because of congestive heart failure and auricular fibrillation secondary to hypertensive cardiovascular disease. Three

months before admission her family physician supplemented the digitoxin with hydrochlorthiozide and a commercial preparation containing theobromine 320 mg., luminol 10 mg. and rauwolfia 1.5 mg. Shortly thereafter she developed weakness, decreased exercise tolerance, myalgia, anorexia, nausea and eight to 15 watery stools daily. Ten days before admission hydrochlorthiozide and theobromine were discontinued but the diarrhea persisted. During the ten days before admission fluid intake decreased markedly with a concomitant decrease in urinary output. Three days before admission the patient complained of dizziness, frontal headache, and the nausea and vomiting increased in severity. She lost twenty pounds in the three months before admission.

Physical examination revealed a blood pressure of 120/50, pulse of 48 per minute which was irregularly irregular, respiratory rate of 14 per minute and an oral temperature of 96.8 degrees Fahrenheit. The patient was lethargic, somnolent, irritable and uncooperative. She appeared moderately dehydrated. Dry crackling rales were heard in both lung bases. The left border of the heart was in the anterior axillary line in the left fifth intercostal space. A grade I basal systolic murmur and auricular fibrillation were present. The abdomen was doughy, and soft with normally active bowel sounds. The liver was palpable two centimeters below the right costal margin. There was bilateral costovertebral angle tenderness. Mild pre-

*This paper is from the Oklahoma City Clinic.

tibial edema was present bilaterally. Neurological examination revealed slow cerebation but no disorientation. Superficial abdominal reflexes, knee jerks and ankle jerks were absent.

Laboratory data included a hemoglobin of 15.2 grams, hematocrit 48 per cent, white blood cell count 29,750 per cubic millimeter with 83 neutrophils, four basophils, eight lymphocytes, one monocyte and four eosinophils. Blood urea nitrogen was 150 milligrams per cent, serum sodium 124 milliequivalents per liter, potassium 2.5 milliequivalents per liter, carbondioxide combining power 17.3 milliequivalents per liter, and chloride 103 milliequivalents per liter. Urinalysis showed a specific gravity of 1.013, pH 6.5, trace of albumin and three to five white blood cells per high power field. Stool guaiac for blood was positive. Electrocardiogram was interpreted as showing left ventricular hypertrophy, digitalis effect, auricular fibrillation and later a complete AV block. Chest x-ray showed cardiac enlargement, hilar congestion and a density in the right lower lobe. Cultures of urine and stool for routine pathogens and tubercle bacilli were negative. Protein bound iodine, barium enema and intravenous urograms were normal. Sigmoidoscopic examination to 25 centimeters was normal.

Hospital Course: Digitoxin was withheld and the patient was begun on three grams of potassium chloride daily and a high water intake. By the second hospital day she had stopped vomiting, was alert, strength and appetite were returning and the deep tendon reflexes were brisk. On the fifth hospital day digitoxin was resumed at 0.1 milligram per day. Renal biopsy was done on the fourteenth hospital day and showed vacuolization of the proximal and distal tubules (figure 1). She was discharged on the fifteenth hospital day, ambulatory, cheerful and loquacious. One year later she was asymptomatic. Representative laboratory data during this period of observation are shown in table 1.

COMMENT

This woman developed symptoms following the addition of diuretics to digitalis

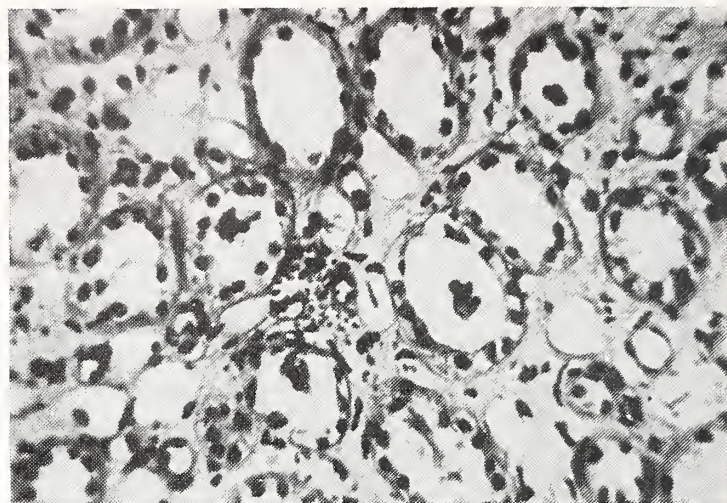


Figure 1. Renal biopsy obtained on the fourteenth hospital day. There is marked vacuolization of the cells of the convoluted tubules.

therapy. All the signs and symptoms were secondary to digitalis intoxication and hypokalemia. Uremia developed, possibly due to the prolonged illness and dehydration. Renal biopsy showed no renal damage other than that of hypokalemic nephropathy. Discontinuation of digitalis and replacement of potassium rapidly restored the patient to her former state of health.

DISCUSSION

In 1942 Follis, *et al*, described a renal lesion in rats fed a low potassium diet which was characterized by vacuolisation, dilatation and flattening of the tubular epithelium.³ Williams, *et al*, in 1947 reported a patient with gastroenterocolitis and a serum potassium of 2.9 milliequivalents per liter who died in uremia.¹⁰ Autopsy showed vacuolization of the epithelium of the proximal convoluted tubules, a lesion they termed "clear cell nephrosis." However, the authors did not relate the pathological findings to the depressed serum potassium levels. Perkins, Peterson, and Riley, in 1950 reported a patient who had chronic diarrhea and electrocardiographic evidence of low

William L. Hughes, M.D., graduated from the University of Oklahoma School of Medicine in 1957 where he is now Clinical Assistant in Medicine.

Doctor Hughes is affiliated with the AOA, the American Federation for Clinical Research and the Oklahoma City Clinical Society.

Date	Na	K	Cl	CO ₂	BUN	Urine Sp. Gr.	Urine K+ 24-hr.	Urine Na+ 24-hr.
10-2-59	124	2.5	103	17.3	150			
10-6-59	135	3.3	102	25.4	110	1.013	2.0 mg.	0.88 mg.
10-8-59		3.3			60	1.005		
10-12-59					22	1.001		
10-16-59	135	4.0	107	23.4				
2-15-60	150	4.5	110	26.5	23			
9-2-60	145	3.7	102	37.7	15			

TABLE 1

Representative laboratory studies of J.B. during 11 months of observation. The initial studies (10-2-59) were done on the day of admission to the hospital. Urinary potassium (10-6-59) was measured on the third day of potassium therapy.

serum potassium.⁵ Autopsy again revealed vacuolization of renal tubular epithelium. The authors postulated hypokalemia as the cause of death. Key, in 1952 reported a similar case with serum potassium levels below 1.25 milliequivalents per liter.⁴ Autopsy revealed vacuolization of renal tubular epithelium. The author thought this pathological finding was secondary to the low serum potassium. Relman and Schwartz, in 1953 reported two cases with depressed serum potassium levels who had low urinary potassium levels, impaired renal concentrating ability, depressed glomerular filtration rates and decreased tubular function, all of which returned to normal with potassium replacement.⁹ In 1954 Rice, *et al*, described eight patients who died unexpectedly and demonstrated vacuolization of renal tubular epithelium at autopsy.⁸ All of these patients had low serum potassium levels before death. It was not until 1956 when Relman and Schwartz demonstrated the reversibility of the renal lesions following potassium therapy by serial renal biopsies, that the relationship between a low serum potassium and tubular degeneration was clarified.⁷

Hypokalemia usually is preceded by protracted nausea and vomiting, colitis, diarrhea due to chronic excessive use of laxatives, or prolonged gastric suction without potassium replacement. Reimer, Schoch, and Newburgh who studied normal volunteers on a diet containing nine milliequivalents of potassium daily found that after 12 days the 24 hour urinary excretion of potassium was reduced to 11.4 milliequivalents per liter.⁶ Thus, the kidney was unable to maintain a positive potassium balance in the face of a

severely restricted potassium intake. In addition, they observed that sodium retention occurred which could be corrected by increasing potassium intake resulting in sodium diuresis. Black and Milne also demonstrated the inability of the kidneys to conserve potassium with an inappropriate retention of sodium.¹

Signs and symptoms of hypokalemia are weakness, easy fatigability, polydipsia, polyuria, weight loss, hypotension, tachycardia, pedal edema, ileus and hypoactive reflexes. Electrocardiographic evidence of low serum potassium is suggested by sagging ST segments, low T waves, and a prolonged QT interval. Serum electrolyte values vary according to the basic illness but a low serum potassium is always present. The histological picture of the kidney in hypokalemia is characterized by flattening and granulation of the tubular epithelium and the presence of large vacuoles in the epithelial cells of the convoluted and distal tubules. The only characteristic finding on routine urinalysis is hyposthenuria. Renal function studies by Relman and Schwartz showed a decrease in glomerular filtration rate as measured by decreased clearance of creatinine, urea, and inulin and markedly impaired tubular function with inability to resorb water or excrete phenol red.⁷ The presence of an elevated blood urea nitrogen, according to Relman and Schwartz, implies independent underlying renal disease.⁷ However, a few cases have been reported with an elevated blood urea nitrogen in which no histological evidence of renal disease was found other than the lesion of hypokalemia. Williams, *et al*, described a patient with colitis whose non-

protein nitrogen varied from 95 to 144 milligrams per cent whose kidneys showed only tubular vacuolization at autopsy.¹⁰ Similarly, Rice reported eight post-operative patients, dying for inexplicable reasons, who had only tubular vacuolization of the kidneys at autopsy.⁸ Two of these patients had a blood urea nitrogen above 70 milligrams per cent.

Digitalis intoxication is far more frequent than we realize. The common symptoms of anorexia, nausea, vomiting, associated with bradycardia, premature ventricular extrasystoles and AV block, are well known to all of us. However, symptoms such as diarrhea, weakness, dizziness, muscular aches, headache, confusion, syncope, increase in the severity of congestive heart failure, gynecomastia, sinus tachycardia, paroxysmal atrial tachycardia, atrial fibrillation, nodal arrhythmias, ventricular tachycardia and ventricular fibrillation are less frequently recognized as due to digitalis overdosage.² Certain manifestations of digitalis intoxication, such as nausea, vomiting and diarrhea are capable of producing hypokalemia. Hypokalemia accentuates the effects of digitalis and causes sodium retention. If diuretics are used to combat sodium retention further potassium loss occurs and a vicious cycle is set in motion which may result in a severe

life-endangering illness. The case presented illustrates this series of events and, hopefully, will serve as a reminder of the potential harmful effects of modern drug therapy.

SUMMARY

A patient with hypokalemic nephropathy, uremia and digitalis intoxication is presented with a brief review of the literature concerning present day knowledge of hypokalemic nephropathy is made. The role of drugs in the production of this syndrome is discussed. □

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- 301 N.W. 12th Street, Oklahoma City, Oklahoma

MEDICAL EXAMINER BILL PUSHED

The Oklahoma State Medical Association is strongly recommending the passage of Senate Bill 295 by the Oklahoma Legislature. Authored by Senator Cleeta John Rogers and Senator Louis H. Ritzhaupt, the measure establishes a biennium appropriation for the Medical Examiners Act passed without appropriation by the 1961 Legislature.

Annual appropriations of \$118,320 for the first year and \$125,440 the second year are being sought. The funds will be used to employ a state office staff for the State Medical Examiner, and will include salaries for fulltime pathologists as well as operating expenses. In addition, state funds will be available to pay the fees of county medical examiners.

S.B. 295 has received approval of the Senate Appropriations Committee and passed the Senate on May 12th by a vote of 32-0. All Oklahoma physicians are urged to write their Representatives immediately to assure approval in the House. □

Work Capacity Studies in Cardiac Patients

JOHN NAUGHTON, M.D.*

THE SUBJECT of work capacity in the patient who has sustained a myocardial infarction has been one of long controversy. Two voices—one favoring complete inactivity and retirement; the other advocating early ambulation and resumption of normal physical activity—have been heard repeatedly over the years. Despite vigorous debate and scholarly arguments based on clinical impressions, little scientific documentation of the cardiac's response to work is available. Undoubtedly, the occasional sudden death after exertion that clinicians have observed among their cardiac patients has prompted a hands-off attitude with respect to studying the "working cardiac patient." The circumstances appear to be changing however, in part due to the increasing incidence of myocardial infarction in the younger wage-earning males; and in part due to the diligent and careful investigative pursuits of Balke, Bruce and Hellerstein.

The problem of work capacity in the cardiac patient is being investigated in the Oklahoma Medical Center. The principles used in evaluating the work capacity of healthy individuals have been modified and applied to the study of the cardiac patient. The employment of a modification of the Balke work capacity tests makes it possible to study almost every ambulatory patient and to gather physiological measurements during the work performance. During the past 18 months, 100 people have been tested; 51 of these individuals had past histories of myo-

cardial infarction. To date there have been no serious complications.

From this initial group there is evidence that many cardiac patients have physiological responses similar to untrained, presumably healthy individuals of comparable age and weight at identical workloads. This would suggest that the asymptomatic uncomplicated, healed post-myocardial infarction patient is more "untrained or unfit," than his presumably healthy contemporary. This, of course, is not the case with all cardiac patients.

What now? Is the demonstration that the principles of work physiology can be applied to the study of unhealthy individuals important? Probably not unless we are willing to take the next step—the demonstration that the cardiac patient can be trained, and that his response to training is like that of healthy individuals. If this training is done under close medical supervision and objective data recorded, then much more of the physiology of the cardiac patient will be learned. Whether or not physical training is necessary or beneficial is another proposition. The hypothesis is that a more efficient trained organism is better prepared to withstand the threatening challenge of the environment—in this case, coronary artery disease. □

Ed. Note. Available from the Oklahoma State Heart Association, 825 N.E. 13th Street, Oklahoma City, Oklahoma are reprints from "Circulation" Vol. XXVII, entitled "Symposium on Coronary Arteriography." These reprints provide an excellent background for viewing the film "Cine Coronary Arteriography," which is also available through the Oklahoma State Heart Association. The cost of the reprints is \$1.00 per copy.

*Chief Resident, Department of Medicine, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

Dean's Message

Although the impending necessity for a new University Teaching Hospital and the need for an immediate increase in the state's allocation of operating funds for the Medical Center were explained in two recent messages, it was not made clear that medical education in Oklahoma has arrived at a very critical point; that more is at stake than merely meeting biennial demands of growth and cost increases.

The officially recognized era of "great progress and achievement of this medical school" may be approaching an end brought on by financial starvation during recent years. The hard labor and fine cooperative spirit of the alumni and faculty can be smothered by a continuation of the present low state financial support. Our "distinguished and outstanding faculty dedicated to teaching and research" is being sought after and offered new and more remunerative opportunities at other medical schools. These quoted phrases are from recommendations made after a review of our school by the Council of Medical Education and Hospitals. To quote further: "Very serious problems are thus expected for the school in the near future in regard to both retention and recruitment of faculty members. Funds provided by the state for the support of the school are considerably lower on a per medical student basis than in comparable states. Additional financial support must be provided by the state for both the medical school and hospitals if the school is to maintain its present high standards of quality."

Statements derived from a recent re-

port on "Money and Medical School" by the same AMA agency, help to elucidate the problem: "The representative medical school of 20 years ago consisted of a building housing small basic science departments and a library. Most of the clinical teachers were volunteers and required little in the way of office or laboratory space. In the present day medical teaching center, education, administrative and financial responsibilities tend to be centralized in the medical school. Research units, often approximating research institutes, are a usual component. Research, even in the clinical departments, has become increasingly dependent on laboratories, utilizing highly organized teams and complex equipment. Even if a school wanted to eliminate the training of graduate students, residents, fellows and technical students, it would find it very difficult to do so. Most important, a school can retain a competent faculty only when it provides an environment which encourages the individual teacher to provide adequate training in his own field." (At our school, all this is too dependent on outside grants.) "If present trends continue, the future direction of medical education may pass largely from the educational institutions to the granting agencies which provide such a large proportion of the school's support."

Never has the need for a sound plan for state financing of the Medical Center been more urgent. It should be the concern of all physicians in Oklahoma to support the efforts being made to see the medical school through this crisis.

Mark R. Everett

Population Genetics of the A-B-O Blood Groups

ALICE M. BRUES, Ph.D.

For a long time following the discovery of the A-B-O blood group system, it was believed that these genes were quite neutral in respect to the survival of their bearers. The blood types, in fact, were welcomed by anthropologists as representing traits which could be considered immune to natural selection, so that gene frequencies once established in a population would remain constant over the centuries, and afford reliable means for assessing the relationships and ancient migrations of various peoples of the world. Several factors contributed to this belief, not the least being the facts that all three of the blood types are found in the great apes, no species having less than two of them, indicating that blood group diversity is an ancient heritage among the Hominoidea; and that although some racial and regional differences in gene frequencies are present in modern man, the divergence is limited. The evidence appeared to be that blood group frequencies changed only with monolithic slowness, if at all.

This comfortable hypothesis became untenable in 1947, when Waterhouse and Hogben clearly demonstrated that there were maternal-fetal incompatibility reactions involving the A-B-O blood group system. In their original paper they found a deficiency of about 25 per cent in the number of A children born to O mothers, as compared with the number expected. Numerous later

investigations have confirmed this finding. This discovery might at first glance appear to be only a minor exception to the theory that the blood groups were immune to natural selection. However, it immediately necessitated recasting our entire concept of the manner in which blood group gene frequencies are maintained at relatively stable levels. In order to understand this it is necessary to review certain basic theorems of population genetics as they apply to situations in which natural selection is taking place.

The simplest sort of natural selection is that in which some particular gene always confers some sort of biological advantage, by way either of enhanced survival, or of greater fertility on its possessor. The frequency of such a gene will tend to increase from generation to generation, depending on the magnitude of the advantage conferred and the mode of manifestation of the gene itself. (The term dominance is to be avoided in this connection since it pertains properly to our ability to distinguish homozygous from heterozygous genotypes by means readily available to us. As we shall see later, genotypes which are indistinguishable by ordinary tests need not be alike in selective advantage). This simple type of selection, in which a particular gene is always "good," leads with greater or less speed to a condition where this gene has replaced all its alleles except insofar as they are meagerly restored by mutation. Only rarely would we expect to encounter such a phenomenon in progress; for the most part we see only

the end results—prevalence of genes which we now consider “normal” though at one time they were innovations.

More complex types of selection depend on gene interaction. The possibilities of interaction of non-allelic genes are of course nearly infinite: at present we will speak only of an interaction of allelic genes which transcends an additive effect; *i.e.* where the heterozygous individual who has one each of two allelic genes is either more or less fit than *either* homozygote. Let us first dispose of a possibility of which few cases are known: that in which the heterozygote is discriminated *against* by natural selection. In such cases there is a constant loss of heterozygous individuals from the population, either overtly, by premature death, or covertly, by reduction of fertility. Since loss of a heterozygote removes from the gene pool of the population one of each allele concerned, that allele which is originally the least common will be eventually eliminated. There will be a sort of equilibrium point at the 50-50 gene frequency, where in theory the loss of each heterozygote leaves the population still 50-50. However, this is a knife-edge equilibrium, for as soon as a chance deviation in one direction or the other occurs, the downhill course will be continued till one gene is eliminated. More importantly, it would be only under very extraordinary circumstances that such an equilibrium could arise in the first place. If either one of the genes appeared in a population in which the other was established, it would, since it was comparatively rare, nearly always be combined with the established gene in a heterozygous genotype. It would, in that combination, be deleterious and would tend to be eliminated. Thus the central equilibrium point would not be attainable by natural processes except a precisely balanced hybridization. The situation discovered by Waterhouse and Hogben is a case basically of this type, since it involves elimination of a heterozygote (OA) although it has certain special features which will be discussed later.

Much commoner, probably far commoner than we have specific knowledge of, is

the sort of situation in which the heterozygote formed by the combination of two allelic genes is *superior* to the homozygotes in survival value. Such situations, undoubtedly including many cases in which we have no specific means of identifying either gene, appear to underlie the phenomenon known as heterosis or hybrid vigor, which was known and even investigated more or less systematically long before the inception of anything resembling modern genetics and which through its agricultural applications is familiar now to many persons whose knowledge of genetics is limited. Heterosis in population genetics leads to the situation known as balanced polymorphism, by which a population which contains more than one of the possible alleles at a given locus, tends to remain in this heterozygous state. Now the commoner a gene is within a population, the higher is the ratio of its homozygous appearances to that of its heterozygous appearances. Consequently, when the gene frequencies of the population start to diverge from the optimum percentage level, the gene which is becoming too common for best advantage finds itself discriminated against and the one which is becoming rare becomes more desirable than before. Thus the wandering population is gently pushed back to its balanced condition. If the selective values of two homozygous genotypes are the same, the system will balance with the genes 50-50; however, if they are different there will be a balance at some other level. Most workers now believe that some such mechanism underlies nearly all cases where populations remain for considerable lengths of time in a continuing heterozygous condition with respect to two or more allelic genes. This hypothesis seems particularly called for in instances where populations are of relatively small size, since random sampling from generation to generation eventually tends to eliminate heterozygosity in a purely statistical manner if some compensating mechanism is not present.

We may now examine in more detail the problems raised by Waterhouse and Hogben's discovery and see why it had such a disruptive effect on our concepts of the non-functional nature of the blood groups. As soon as the fact of incompatibility risk of

the AO fetus in the OO mother was accepted, we were presented with a case of the rather rare type of selection against the heterozygote. However, this case presents some special features. Normally we assume that adverse selection acts by eliminating a certain percentage (over and above what we consider normal or average attrition from conception on) of a particular genotype within a certain population. In this case there is an added specification that this shall occur only if the mother has a particular genotype. Note that while we often speak of the "incompatibility of A fetus to O mother," it means specifically "of OA fetus . . ." since an O mother cannot have an AA child. So the extent of the risk to OA individuals depends actually on how many of them have mothers who lack the A gene. (For the moment, to avoid excessive complications, we are assuming that our population — let's say they are full-blood Indians — lacks the B gene altogether). Now half of all mothers of OA children have the A gene since there is a 50 per cent chance that the child's A gene is his maternal gene. However, if this particular child received the A gene from his father and the O gene from his mother, the mother's other gene is an unknown quantity. If it happens to be A, no incompatibility exists. So the "safe" cases from the point of view of OA fetus are 0.5 plus a quantity representing 0.5 times the percentage of A genes in the population. If the A gene is very common, incompatibility almost never will occur. If the A gene is very rare, nearly all of the 50 per cent cases in which the A gene came from the father rather than the mother, will present an incompatibility situation.

The result of all this is that incompatibility of OA fetus to O mother will strike the OA zygotes with a frequency varying from a maximum at very low population percentages of the A gene, to exceedingly low rates where the A gene is nearly universal. The basic premise of anti-heterozygote selection, however, still holds that it affects most seriously and tends to deplete whichever is the rarest of the two genes. The net effect of the incompatibility reaction, supposing that no other selective differentials exist between the various geno-

types, is to produce a pattern in which a precarious equilibrium would exist at the gene frequency 0.5 A, 0.5 O. Any group which began to diverge from this point (and any group, no matter how large, would eventually jog loose) would, if it diverged in the direction of more O, skid downward at an accelerating rate towards 100 per cent O. If it diverged in the direction of more A, it would move upwards at a decelerating rate and finally reach a point where the last remaining O genes, in a population in which incompatibility could almost never occur, would likely be lost at last by mere chance processes. In either case the process becomes asymptotic as the rarer gene disappears. If this is the situation we would expect it to be most unusual for any population to be found at the 50 per cent level or near it, for that matter anywhere between 50 per cent and 100 per cent O, unless it had recently been formed by the mixture of other groups and had not had time to "settle down." Most groups, after a number of generations of such selection, would either have lost A altogether or gravitated to a level of close to 100 per cent A. Now this could hardly be more different from what we actually find when we examine data on various world populations, of which we will be principally interested right now in the aboriginal peoples of America and Australia who did not have the B gene. A considerable number of these groups have indeed stabilized at 100 per cent O; however, the remainder are scattered out over a range extending up to 55 per cent A, the highest recorded A in the world. None are in the nearly or entirely A range which would be one of the areas stable under the incompatibility effect. Many, however, are in the intermediate range of frequencies which the incompatibility effect would quickly disrupt.

We have the paradox then of known incompatibility reactions between the A and O genes, producing a form of antiheterozygote selection, while the world distribution of frequencies somewhat more resembles the pattern we would expect from pro-heterozygote selection. In order to bring sense into this picture, we begin to look for some selective advantage of the heterozygotes, in respect to fertility or youthful survival, which would be sufficient to counteract the

adverse effects of incompatibility. It is important to note that what we need to find is something favoring the heterozygote; not, as has frequently been stated, something to "compensate for loss of A." It is true that if we think in terms of a population like our own, which has an A frequency between 20 and 30 per cent, the problem in this particular range does appear to be "loss of A" through incompatibility, because A is the less common gene than O and therefore more readily hurt by antiheterozygote selection. However, in any population which once exceeded 50 per cent A, as do some North American Indian ones at the present time, the incompatibility problem would be "loss of O." As we shall see later, thinking of blood group selection as a property of the gene rather than as a function of the heterozygous condition is a hazard to successful investigation.

The problem is of course not as simple as outlined above, since the presence of the third gene B in most large populations of the world complicates the relations considerably. If the only result of incompatibility were an internecine war between O and A, the B gene would finally take over, unless it were subject to some retarding effects also. This now appears to be the case for not only was OB soon found to be lost in matings involving O mothers, but extensive work by Matsunaga and his associates has shown that incompatibility reactions of about the same magnitude take place between AO fetus and B or AB mother and between BO fetus and A or AB mother.

Investigation of all possible forms of selection in the ABO system has been very active in the last decade and has resulted in what appears to be somewhat chaotic results. The basic values for the incompatibility reactions seems to be well established as a roughly 20 per cent risk to all fetuses exposed to one of the incompatibility situations. The possible ways in which other selective effects may be manifested and the ways in which evidence of them has been sought are varied. Since rather large numbers of cases are necessary to establish statistical significance, it has been necessary

in many cases to resort to data which were originally assembled for other purposes, and not in a way ideal for studying selection. The incompatibility situation is a special form of selection in that it is brought about in a way not depending on the genotype of the individual affected alone, but by reaction to a particular factor in the environment, namely the genotype of the mother. Selection favoring or disfavoring a particular genotype may of course be dependent on other environmental factors which may vary from time to time or from place to place. No relation involving strictly geographical environment and differential selection has been demonstrated though it would be a handy way of accounting for racial differences in blood group distribution. One ambitious work recently published has attempted to explain regional differences on the basis of a differential susceptibility of individuals of various blood types to plague, smallpox and syphilis and the known or supposed world histories of these diseases. (Vogel, *et al*, 1960). More solid data has been derived from actual study of the incidence of various disease entities in persons of different blood groups. It seems fairly well established on the basis of numerous studies, in some cases carried on in different parts of the world or among different races (Buckwalter, 1957), that peptic ulcer is more common in persons of group O, gastric carcinoma, pernicious anemia and diabetes mellitus in persons of group A. (Roberts, 1959). But this represents a slender selection from the total studies published on the subject, many of which seem mutually contradictory. A constant hazard in these investigations is the difficulty of obtaining adequate control series since a slight unsuspected bias in the choice of controls may vitiate the study. A more hidden difficulty which many of the workers seem somewhat unaware of is the fact that the serologically established types A and B are combinations of AA and AO, and BB and BO genotypes respectively. Since the maintenance of polymorphism demands that heterozygotes shall have different and opposite overall selection coefficients from homozygotes, this leaves the data seriously confounded. Likewise by poor fortune the disease entities so far establish-

ed as having some relation to blood groups are ones of comparatively late incidence in life, which would not appear to affect an individual's genetic contribution very severely.

Another semi-environmental effect which has been established is that incompatibility in the ABO system has a protective effect against erythroblastosis due to Rh incompatibility. (Cohen and Glass, 1959). This introduces the possibility of difference in ABO selection correlated with the genetic environment as represented by the heterozygosity of a given population in regard to Rh factors. Inconsistent results between different workers may in some cases be due to other effects of genetic environment whereby selection in the ABO types differs according to the genetic background of one or another population.

Other factors which have been investigated are differences in fertility of various genotypes (exclusive of "combination effects" such as incompatibility) and possible differences in viability of various genotypes in the embryonic and fetal periods. These investigations usually have gone hand in hand with incompatibility studies since they generally use the same data. These results again are inconsistent and sometimes controversial and not always easy to interpret even after they are established. One of the most active workers has been Matsunaga who, with his co-workers, has analyzed a large series of Japanese families. In addition to defining additional incompatibility situations, by examination of data on childlessness and abortion rates in various classes of matings, he has shown a certain amount of differential fertility; he finds in his series that A x A matings have increased fertility and that in general O fathers are relatively infertile. (Matsunaga, 1956, 1959). He also showed evidence for heterozygote advantage of AB (the only genotype which can be identified as a heterozygote on the basis of serological data only). He was able to find 35 families in which both parents were AB; a somewhat easier task in Japan than in most other countries, since the B gene and AB genotype are relatively common there. The 87 children of these families were 65 per cent AB rather than the expected 50 per

cent. (Matsunaga, 1954). Though the series is small and the results perhaps exaggerated by a chance factor, it appears to be proved that in this case the AB genotype fares better prenatally than the homozygous types. Unfortunately the heterozygous AO and BO genotypes cannot be serologically distinguished from the AA's and BB's. The bulk of Matsunaga's data did not include blood groups of children, merely blood groups of parents and number of children. Chung and Morton (1961) found an excess of heterozygous children in compatible matings and therefore consider that heterosis is at work. No excess of abortion was noted in these groups, so they believe that some homozygotes AA and BB may be eliminated at very early stages.

It is doubtful that the reader is interested in a recapitulation of all the contradictory results which have been obtained in this field. Perhaps the matter may be closed by quoting Chung and Morton, whose bibliography totalled 82 titles and who concluded, "In an area fraught with many pitfalls, some of them unexpected, it would be well to regard the evidence for the effects other than incompatibility as only preliminary."

Note should be made of evidence for balanced polymorphism in the M-N blood group system. Not only are all known human populations heterozygous for M and N, but considerable evidence indicates that MN offspring are in excess over the expected frequency in heterozygous matings, indicating prenatal selection in favor of the heterozygote in the MN system. (Morton and Chung, 1959). In the absence of further evidence at the present time for man, evidence for selection in blood group systems of other animals is of interest. The most carefully studied is the blood group polymorphism in chickens investigated by Briles and his associates (1957) which involves at least 21 alleles at one of the known loci. Briles noted that even under intensive inbreeding it is difficult to obtain populations which are homozygous for any single blood group, and that in populations in which the blood group heterozygosity has been reduced there occurs both reduced hatchability of eggs and reduced viability of chicks, making the colonies difficult to

maintain. This appears to indicate that in this species there is strong selection in favor of heterozygous blood group genotypes. Perhaps the great efflorescence of blood group diversity here is encouraged by the fact that the practice of laying eggs effectively removes any opportunity for disadvantageous incompatibility reactions. It might be noted also that if hatchability of the human zygote were as easily quantified as in the chicken, some of the difficulties of blood group study would be solved.

Thus the results of the studies of blood group selection are presently quite disappointing in view of the number of pages that have been published, so we find ourselves, like various reviewers before us, trying to suggest what is wrong. The necessity for large bodies of data is a rigorous one, and has resulted in limitations such as that on much of Matsunaga's work, in which the records available gave blood type of both parents but in regard to children stated only the number born. Many workers have done nobly in extracting what information they could from such not very suitable data. Of course someday large bodies of data tailored to the problem must be obtained which means much more complete family records.

Another very serious problem, one of those so basic that it is liable to be overlooked, is that we have no means of serologically distinguishing the heterozygote OA and OB from the homozygote AA and BB. The solution of the incompatibility problem would not have been so easy had it not involved a situation in which the A child was known to be OA. It would be a happy event if some immunologist were to break the iron curtain of dominance and develop a means for distinguishing heterozygote from homozygote. Lacking this, we must make what effort we can on a genetic basis. It is possible of course to infer from the theorems of population genetics what percentage of A's are AA's in a given population, without knowledge of the families of the persons involved but we cannot identify individuals. Knowledge of the families will permit some sorting, however. We know that an A individual cannot have either

an O or a B parent, or an O or a B child; correspondingly for BB's. This would make it possible to declare some A's to be OA's and sort out a more nearly pure AA series. Of course this does not tell us if an A child of A parents is OA or not and it is unlikely that we can wait around for the next generation to enlighten us. One is tempted to suspect from the number of demonstrated blood-group-influenced diseases related to the stomach that here we are dealing with an actual effect of the A substance on the tissue so that in this case A and OA are properly combined. But it is more probable that the overall effects of blood group on survival are heterotic in nature and that the evidence is likely to be degraded or lost if we sort by phenotype only. Of course, as Morton and Chung have suggested, it is possible that nearly all of the selection effects of the blood groups are prenatal and are not going to be found by studies of adult diseases. Perhaps we should consider also that the balanced polymorphism of the blood groups may owe its equilibrium in part to differential resistance to various infectious diseases which the advent of antibiotics has taken virtually out of the realm of study. In any event the problem is not likely soon to lose its interest for the clinician, the geneticist, or the anthropologist.

Indispensable and continuing assistance in this work is being received from the facilities of the Medical Research Computer Center. Support for this work has come from the National Science Foundation through grants G-14206 and G-19480.

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800 N.E. 13th Street, Oklahoma City, Oklahoma

ABSTRACTS

THE MORPHOLOGY OF THE PREPUBERTAL OVARY: RELATIONSHIP TO THE POLYCYSTIC OVARY SYNDROME. James A. Merrill, M.D., *South-ern Medical Journal* 56: 225, March 1963.

The author examined the microscopic morphology of ovaries from ninety-eight children from newborn to fifteen years of age. The majority of such ovaries contained multiple follicle cysts, atretic follicles and luteinization and hyperplasia of the theca. Follicle growth and development proceeded throughout childhood. The ovaries of girls, ages ten to fifteen, are at least the size of adult ovaries and had the additional finding of cortical fibrosis. Hence they are morphologically similar to the ovaries of the polycystic ovary syndrome. Numerous photomicrographs are presented which illustrate the above findings.

The similarity between ovarian morphology in the adolescent and the patient with the polycystic ovary syndrome suggests that the microscopic ovarian changes in the latter are specific only of anovulation. Furthermore, the clinical similarity between adolescence and the polycystic ovary syndrome is noted, that is anovulation, infertility, menstrual irregularities, and androgenic manifestations. Finally, similar ovarian morphology is seen in patients with diverse conditions, including intracranial lesions and adrenal disorders. The author hypothesizes that the clinical syndrome may be related to a failure to initiate ovulation, and possibly to a failure in maturation of enzyme systems related to steroid biosynthesis.

STICKY FINGERS

Doctor Kelly M. West and his associates have critically examined the skin-surface glucose test as a screening method for the detection of diabetes and have found it wanting.* Earlier studies had suggested the presence of some correlation between blood glucose levels and the presence or absence of skin-surface glucose as detected by this test. The simplicity of the procedure, which merely requires holding a strip of moistened glucose oxidase paper between thumb and forefinger for one minute and then examining it for a color change, has obvious appeal for mass testing.

Twenty-nine per cent of a total of 220 apparently non-diabetic individuals tested by this method were found to have positive reactions. These subjects were chosen from several groups and were tested under a variety of circumstances. A group of 44 hospital employees who were tested between 10 and 11 a.m. had 43 per cent positive reactions. Eighty-one ambulatory patients with no clinical evidence of diabetes were tested in the fasting state, and of these 10 per cent were found to be positive. Forty-one medical students were tested at 5 p.m., and of this group 56 per cent were positive. Thirty outpatients with fasting blood glucose levels below 100 mg. per cent were tested in the fasting condition, and of these 17 per cent were found to have positive tests. Twenty-four non-diabetic inpatients were tested two hours after breakfast, and nine (37 per cent) showed positive skin tests. A further sprinkling of rhine-

stones was added by the observation that sometimes one hand was positive and the other negative.

Ten of the 23 medical students who had positive skin tests were chosen at random to receive fasting blood glucose and glucose tolerance tests, and when so examined none showed evidence of abnormal glucose utilization.

When the skin test was given to known diabetics, the results were almost as chaotic, with many false "negatives" also being obtained.

REVIEWER'S NOTE: Concurrently with Dr. West's publication, Zaias (*Diabetes* 12:53, 1963) reported a modification of the skin test which looks—on paper at least—to be considerably more accurate. His method differs in that the skin of the forearm is used as the test site, and is "stripped" by repeated blotting with cellophane tape to remove surface debris and the stratum corneum. After thus preparing the area, the glucose oxidase paper is moistened and applied. With the eight diabetic subjects he tested in this manner, there was a very good correlation between a positive skin test, hyperglycemia, and glycosuria. Fingertip tests done at the same time failed to show this agreement. Considering the many opportunities the fingers have to contaminate themselves in the normal course of events, the presence of many false readings is easily understood. Similarly, washing the hands before testing might easily wash away the sugar one hopes to detect.

*Value of the Skin-Surface Glucose Test as a Screening Procedure for Diabetes. Kelly M. West, Don A. Rockwell, and Johan A. Wulff. *Diabetes* 12: 50-52 (January-February) 1963.

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Venous Response of Intestine to Endotoxin. L. B. Hinshaw and D. L. Nelson. *American Journal of Physiology* 203:870, 1962.

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Reprints of the above publications are usually available on request from the senior author, c/o Mrs. Joan Campbell, Veterans Administration Hospital, 921 N.E. 13th Street, Oklahoma City, Oklahoma.

HIGHLIGHTS OF THE ANNUAL MEETING

It was a "Red-Letter Year" for the 1963 annual meeting of the Oklahoma State Medical Association, just as advertised in advance to OSMA members.

An early tabulation of registration figures for the May 3-5 event in Tulsa indicated a physician attendance of 606 — enough to make a crowd — and most agreed the meeting lived up to expectations.

The scientific program, which featured sixteen visiting lecturers, was popularly received and the sessions generally well-attended. Round-table luncheons, an Americanism Forum, informal "Fireside Conferences," a scientific symposium, business sessions, specialty meetings, and social events rounded out the varied program which has characterized the OSMA meeting for the past several years.

General Chairman Donald L. Brawner, M.D., Program Chairman Howard A. Bennett, M.D., and other committeemen of the Tulsa County Medical Society were most effective in their roles as planners and hosts for the state's largest medical meeting.

Duer Is President

A Woodward general practitioner, Joe L. Duer, M.D., was elected by the House of Delegates to succeed J. Hoyle Carlock, M.D., Ardmore, as president of the association. In an unprecedented situation brought about by the March 13th death of president-elect Peter E. Russo, M.D., Doctor Duer was elected on May 3rd and inaugurated on the following evening at the Inaugural Dinner-Dance of the association.

Named president-elect by the Dele-

gates was Harlan Thomas, M.D., Tulsa, who will succeed Doctor Duer in May, 1964. In other elections, R. R. Hannas, Jr., M.D., Sentinel, was elected vice-president of the association, and, Malcom E. Phelps, M.D., El Reno, and Thomas C. Points, M.D., Oklahoma City, were re-elected to two-year terms as Delegate and Alternate Delegate to the AMA, respectively.

Ten physicians were elected to the OSMA Board of Trustees from districts 2, 5, 8, 11 and 14. They are A. M. Evans, M.D., Perry, G. B. Gathers, Jr., M.D., Stillwater, Alpha L. Johnson, M.D., El Reno, Robert L. Loftin, M.D., Broken Bow, Earl M. Lusk, M.D., Tulsa, C. Riley Strong, M.D., El Reno, C. L. Tefertiller, M.D., Altus, J. B. Tolbert, M.D., Mountain View, Samuel R. Turner, M.D., Tulsa, and Henry D. Wolfe, M.D., Hugo.

Russo Remembered

The House of Delegates officially paid its respects to Doctor Russo and his family by approving a memorial in his honor, which will become a permanent record of the association and will be presented to his survivors as a token of the widespread sympathy of the OSMA membership.

Business Actions

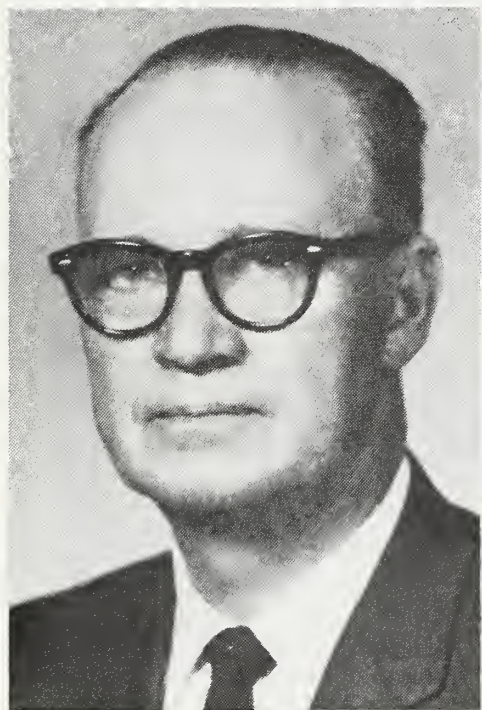
In a smoothly-run, but power-packed eleven hour session, Speaker of the House Marshall O. Hart, M.D., guided the delegates through nine council and committee reports as well as forty resolutions from county societies and individual members.

State legislation, OSMA and AMA dues, professional liability insurance, the Crippled Children's Program, and the Department of Public Welfare's medical care programs were among the agenda items which produced significant actions by the House of Delegates.



Pictured above are the newly-elected 1963-64 officers of the OSMA—President Joe L. Duer, M.D., (seated, right); President-Elect, Harlan Thomas, M.D., (seated, center); Vice President, R. R. Hannas, Jr., M.D., (seated, left); Delegate to the AMA, Malcom E. Phelps, M.D., (standing, right); and Alternate Delegate to the AMA, Thomas C. Points, M.D., (standing, left).

MEET THE PRESIDENT



JOE L. DUER, M.D.

Joe L. Duer, M.D., Woodward general practitioner, has served the Oklahoma State Medical Association in many capacities since he opened his first medical practice office in

Vici in 1934. As the 1963-64 President of the OSMA, he steps into the position with a wealth of experience in association affairs.

He was a member of the Board of Trustees of the organization for nine years, and served a four-year term, 1958-62, as Alternate Delegate to the AMA from Oklahoma. In addition, he has been active in association committee work throughout his professional life and has been instrumental in the development of AMAERF in Oklahoma. At the present time, he is a member of the national advisory board to AMAERF.

Born in Dewey County in 1905, Doctor Duer received his premedical education from the University of Oklahoma, and graduated from the O.U. School of Medicine in 1932. He is the first OSMA president to have been a product of the local school of medicine.

During World War II, the physician served as a naval Lieutenant Commander in the Pacific, and received

the Purple Heart during action on Iwo Jima.

Other activities of the new OSMA leader include long tenure in association with Blue Shield and the OU medical school. He has been a member of the Blue Shield Board since 1953, and has served as a preceptor for the school for the past fourteen years.

Other interests include membership on the Professional Advisory Committee to Vocational Rehabilitation.

Doctor Duer is a charter member of the Oklahoma Chapter of the American Academy of General Practice and of the Oklahoma Medical Political Action Committee. He is also a Fellow of the International College of Surgeons. He has been president of the Northwest Counties Medical Society, the Woodward Kiwanis Club and has served as Chief of Staff of the Woodward Memorial Hospital.

The Duers have two children and are members of the Presbyterian Church in Woodward.

House Joint Resolution 535: The stormiest matter considered by the Delegates was the issue surrounding HJR535, a legislative proposal to submit a \$7 million bond issue to a vote of the people for the purpose of constructing a new hospital for the University of Oklahoma Medical Center.

Although the proposal had already received Senate and House of Representatives approval, a large group of Oklahoma County and Canadian County physicians sought to have the measure reconsidered, until such time as an OSMA committee could thoroughly study all aspects of the undertaking. A resolution calling for the reconsideration met stiff opposition in the OSMA Board of Trustees and House of Delegates, and was finally disposed of when Delegates supported a reference committee recom-

mendation that the association take no stand on the issue.

OSMA, AMA Dues: Respecting the request of the Council on Public Policy and the Board of Trustees, Delegates voted to increase state association dues by \$10 per year, beginning in 1964. The purpose of the increase—first increase in operating revenue since 1948—is to bolster the OSMA's public relations activities.

The AMA didn't fare as well, however, since the Delegates approved a resolution calling for a test of the profession's attitude toward required membership in the AMA (fifteen other states have this feature in their bylaws). A referendum of the entire membership of the OSMA will be taken this summer on the question, the results of which will be published in the OSMA Journal.

Professional Liability Insurance: Delegates approved an overall 20 per cent increase in professional liability insurance rates under the association-approved plan written by the St. Paul Insurance Companies. In addition to the rate increase — brought

about by losses incurred during 1959-60-61—OSMA members will now be classified in four categories for insurance rate purposes. Physicians in two of the categories will profit from the new system, while the other two classes will pay higher rates due to higher risks recently revealed by the National Bureau of Casualty Underwriters.

The OSMA-approved insurance program will still be less costly than competing plans, despite the overall rate increase and the new classification system.

Crippled Children: The House of Delegates supported the intent of three resolutions calling for payment of physicians for professional services rendered under the auspices of the Crippled Children's Act. OSMA's State Legislative Committee is instructed to negotiate with the Department of Public Welfare to determine what changes need to be made in the present law to conform to payment systems prevailing in other medical

(Continued on Page 238)

Complete proceedings of the May 3rd House of Delegates Meeting will appear in the next month's Journal.

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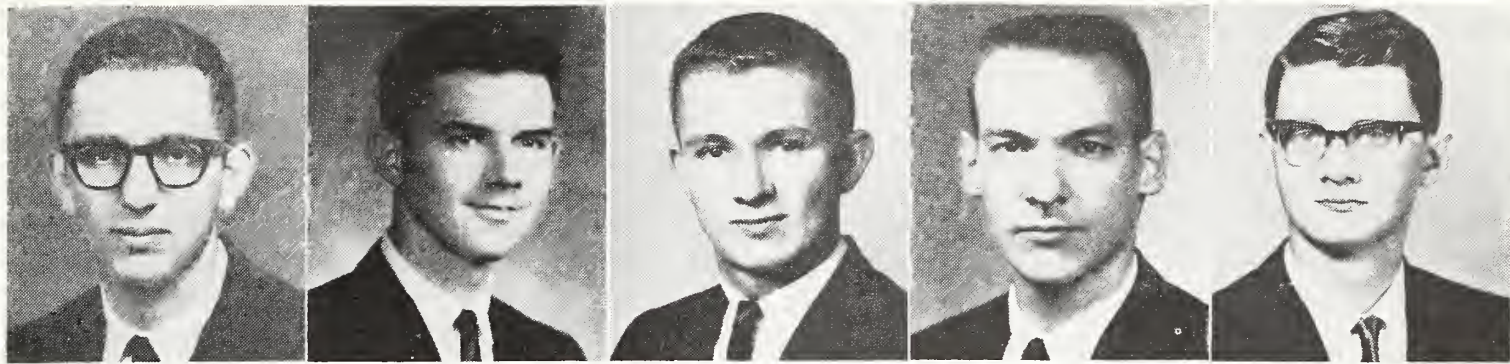
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OSMA Awards Scholarships

Five more outstanding O.U. Medical School freshmen have been named as winners of the 1963 OSMA scholarships. This is the second year financial aid for medical students has been made possible through the scholarship provisions of the OSMA Loan and Scholarship Fund program.

Recipients of this year's \$500 grants are Gene C. Cunningham, Oklahoma City; Johnny H. Jones, Jr., Shawnee; Robert B. Livingston, Oklahoma City; William W. Wallace, Ardmore; and, Don A. Wilson, Blackwell. Awards will be made at the beginning of the fall term.

Three of the honor students who are finishing their pre-medical training will graduate from the University of Oklahoma this spring. They are: Mr. Cunningham, who is the recipient of the "outstanding independent" award; Mr. Jones, who is serving as president of Alpha Epsilon Delta, pre-medical honorary fraternity; and, Mr. Livingston, president of Kappa Alpha Fraternity. Mr. Wallace, graduating this spring from Westminster College, Fulton, Missouri, has received two Westminster honor scholarships and a proficiency prize in physics. Mr. Wilson will graduate from Arizona State University in Tempe, Arizona, where he is president of the Arizona chapter of Alpha Epsilon Delta.

The Program

The financial assistance program was implemented after a 1961 House of Delegates meeting approved a \$5 per member dues increase for the purpose of financing a scholarship,

loan and grant-in-aid program for University of Oklahoma medical students. This action was taken after the Council on Professional Education called attention to the declining quality and quantity of medical school applicants during recent years. Following the House of Delegates action, the Financial Aid to Education Committee was formed and assigned the responsibility of developing rules and regulations for the disbursement and administration of the funds.

Operational plans outlined by the committee included the awarding of five \$500 scholarships each year to the highest-rated Oklahoma residents who apply for first-year admission to the University of Oklahoma School of Medicine. Scholarships are outright, non-refundable grants.

Loans are made available to O.U. students throughout the four-year course on the basis of economic need. A student can borrow no more than \$500 per year. Recipients shall be required to execute a note payable in three equal installments, the date of the first being five years after the note maker's graduation from the university. No interest shall be charged until one year after graduation, at which time simple interest at the rate of three per cent per annum shall be charged upon unpaid balances.

Grants-in-Aid are non-refundable monetary awards to permit students to meet emergency situations of economic need. They are available to students of all grades in \$50 to \$100 amounts.

Last Year's Report

The dues increase, which was effective January, 1962, raised \$8,433.74. Out of this amount, \$2,500 in scholarships was awarded to five freshmen. Seven students executed promissory notes totaling \$1,750. Ten loans which are now being processed, total \$2,750. No applications for grants-in-aid were made last year.

Records of 48 applicants were reviewed before the final scholarship winners for 1963 were named. All applicants met or exceeded the minimum standard of 2.0 premedical grade average. Selection of the five highest-rated students was based upon a comprehensive evaluation of their scholastic achievements. □

2,000 Attend OSMA "Town Hall Meeting"

AMA President-Elect Edward R. Annis, M.D., addressed 2,000 Oklahomans on "Medicare—A Help or A Hoax?" during the recent Town Hall Meeting jointly sponsored by the OSMA and the Oklahoma County Medical Society.

Held April 23 at Oklahoma City's Municipal Auditorium, the event was widely publicized by the OSMA Council on Public Policy. Physicians were encouraged to bring their non-medical friends to hear medicine's top spokesman explain AMA opposition to the controversial King-Anderson Bill.

Many laymen attended and most came away as supporters of medicine's viewpoint. The only disappointment was the size of the audience since the council on Public Policy had hoped for 4,000 persons. □

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AMA Annual Meeting In Atlantic City

The 112th annual meeting of the American Medical Association will be held June 16-20 in Atlantic City.

An attendance of 15,000 physicians is anticipated.

AMA President George Fister, M.D., said that with "better transportation facilities to Atlantic City and more up-to-date room accommodations, attendance at the '63 meeting should be high."

"Since we last met there," Doctor Fister said, "more than 4,000 new motel rooms have been provided. The auditorium has been renovated, including new escalators and additional floor space. The convention bureau has arranged for a new type of air-land shuttle service between Philadelphia and Atlantic City."

A new feature of the program will be a session on "Physician and Clergy Meet in Patient Care," in which leading clergymen and physicians will discuss their common problems in working with patients. Milford O. Rouse, M.D., of Dallas, is chairman.

The Multiple Discipline Research Forum will be presented again, in which more than 200 short papers will be presented, reporting on original investigation of fundamental problems in medicine. Chairman is Edwin H. Ellison, M.D., of Milwaukee.

The scientific program will include eight general scientific sessions, dealing with strokes, genetics, cancer, chemotherapy, peptic ulcer, myocardial infarction, backaches, obesity and venereal disease.

The session will mark the 17th time that the AMA has met in Atlantic City since 1900. At the last meeting there, in 1959, the total attendance was 32,882, including 13,143 physicians.

David B. Allman, M.D., who practiced surgery in Atlantic City for 35 years and is a past-president of the AMA (1957-58), is honorary chairman of arrangements. The local chairman is Charles Hyman, M.D.

Scientific sessions of the meeting will be held in the City Auditorium, on the boardwalk facing the Atlantic Ocean. Scientific meeting rooms and industrial exhibits will be on the boardwalk level of the Auditorium. Scientific exhibits will be on the Auditorium's lower level. A few scientific sessions will be held in hotels near the auditorium.

The Traymore Hotel and the new Colony Motel will be joint headquarters for the meeting. House of Delegates sessions will be held at the Traymore. Woman's Auxiliary headquarters will be the Chalfonte-Haddon Hall Hotel. □

WANTED: Internist, with interest in cardiology, to take over established practice of Ray B. Graybill, M.D., deceased. Contact: Mrs. Ray B. Grabill, CA 3-1800; CA 3-1313 or C. D. Cunningham, M.D., CA 3-8210.

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DEATHS

ROBERT E. FUNK, M.D.

1915-1963

Tulsa internist, Robert E. Funk, M.D., died in Cleveland, Ohio on April 3, 1963.

A native of Powhattan, Kansas, Doctor Funk graduated from Northwestern University School of Medicine in 1940. In 1942, he established his practice in Tulsa.

Doctor Funk's keen interest in medical affairs was evidenced by his work in the creation of the Tulsa County Medical Society's medical library. He had served as a delegate to the OSMA House of Delegates and as a trustee of the Tulsa County Medical Society.

JOHN H. BARHAM, M.D.

1886-1963

John H. Barham, M.D., 75-year-old Tulsa general practitioner, died in Tulsa, March 23, 1963.

The pioneer physician was a native of Zinc, Arkansas and had graduated from the University of Arkansas School of Medicine in 1914. After practicing in Cardin, Oklahoma and in Zinc, Doctor Barham came to Tulsa in 1921.

Doctor Barham was a member of the Oklahoma Chapter of the American Academy of General Practice.

PHILLIPS R. FIFE, M.D.

1919-1963

Phillips R. Fife, M.D., a Guthrie surgeon since 1948, died April 11, 1963.

A native of Guthrie, the 44 year-old physician graduated from the University of Oklahoma School of Medicine in 1943. Following a two-year residency at Wesley Hospital in Oklahoma City, he established his practice in Guthrie. During World War II, he served as a Captain in the Medical Corps.

Doctor Fife was active in his profession having served as president of Logan County Medical Society and was a member of the Board of the Oklahoma Division of the American Cancer Society. He was a member of the Sigma Xi and the Phi Sigma.

HIGHLIGHTS . . .

(Continued from Page 233)

care programs under welfare jurisdiction.

Welfare Medical Care Programs: In addition to the position taken in regard to crippled children's services, Delegates took other significant steps with respect to all medical care programs provided by the Department of Public Welfare for welfare recipients.

Faced with allegations of physician abuse of the welfare programs, the Delegates supported a recommendation of the OSMA Public Welfare Committee to furnish the committee's membership as a standing panel of consultants to the governmental department. By doing so, the physicians will be officially constituted to investigate charges made against members of the OSMA.

A shortage of funds in the Department of Public Welfare and a request to cut back physicians' fees on July 1, 1963 provoked another major action by the House of Delegates. The policy-making group endorsed the committee's recommendation to oppose a reduction in the present fee schedule, and further approved a proposal to turn over the management of all welfare medical care programs to Blue Cross-Blue Shield or some other competent health insurance organization.

If the plan materializes, the insurance organization must provide basically the same benefits to welfare policyholders at a lesser premium cost than is currently being set aside in the welfare department's "pooled fund." The OSMA Public Welfare Committee has been empowered to negotiate the change and report back to the House of Delegates.

Other Actions

Among other actions, the Delegates:

- Approved continuation of the Council on Professional Education's regional postgraduate courses and television programs.
- Endorsed "Health Protection Week" promotion again next year.

Miscellaneous Advertisements

LOOKING FOR a G.P., or an M.D., not averse to doing G.P., as a Locum Tenens for two or three months this summer, while I am on short term medical mission service. Will furnish comfortable home and office, rent free, and will give all net proceeds from practice. Ideal situation for man finishing residency and awaiting assignment to service. May be able to adjust time to suit applicant's situation. Contact A. C. Hirshfield, M.D., 908 N.E. 50th Street, Oklahoma City 5, Oklahoma.

CLINIC BUILDING for lease, 1,250 square feet floor space, six rooms, four-ton air conditioner. Reconditioned 100 milliampere X-ray for sale, if needed. Located 308 N.E. 1st, Pryor, Oklahoma. Contact Warren G. Gwartney, M.D., Harvard Village, Professional Building, 2570 South Harvard, Tulsa, Oklahoma.

WANTED: General practitioner or internist to join established group. New clinic building with complete facilities. Excellent small community. No investment required. Call or write F. W. Hollingsworth, M.D., Canadian Valley Clinic, El Reno, Oklahoma. Phone AN 2-2114.

WOULD LIKE to buy examining room equipment and office furniture. Contact Key C, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

GENERAL practitioner desires location in Oklahoma, population of town unimportant. Graduate of University of Tennessee School of Medicine in 1948. Contact Horace D. Farthing, M.D., Box 116, Ft. Supply, Oklahoma.

GENERAL Practitioner needed in Guymon, Oklahoma, in association with three-man general practice

group. Good salary to start, with partnership later. Contact Medical Arts Clinic, 421 E. 13th, Guymon. Tel. 338-6506.

BIG SAVINGS on "Returned-To-New" and surplus equipment. Reconditioned, refinished, guaranteed, X-Ray, examining tables, autoclaves, ultrasonics, diathermies, or tables, or lights, and more. Largest stock in the Southwest. WANTED: Used Equipment. TeX-RAY Co., 3305 Bryan, Dallas. (Open to the profession Wednesdays, Thursdays, 9-5. Other hours by arrangement.)

OUTSTANDING opportunity for a doctor or group of doctors to step into well established practice with a minimum of expense. Located 85 miles southwest of Oklahoma City, Carnegie has tri-county trade area of 15,000 people. Recent \$160,000 bond issue passed for purchasing and modernizing 20-bed hospital. Contact C. B. Sullivan, M.D., Carnegie, Oklahoma.

WANTED internist, board certified or eligible. Group practice opportunity in expanding community. Write Administrator, The Chickasha Clinic, Box 1069, Chickasha, for complete details. Inquiries kept confidential.

BECAUSE of our loss, by death, of Drs. M. L. Henry and R. A. Harkins, we need two doctors to join our group. Excellent opportunity for general practitioner and board certified specialist in medicine, surgery, E.E.N.T., or pediatrics. Call or write E. D. Greenberger, Medical Arts Building, McAlester, Oklahoma.

WANTED: Internist, with interest in cardiology, to take over established practice of Ray B. Graybill, M.D., deceased. Contact: Mrs. Ray B. Graybill, CA 3-1800; CA 3-1313 or C. D. Cunningham, M.D., CA 3-8210.

CHILDREN'S TEETH can be seriously discolored by three types of tetracycline antibiotics, the Food and Drug Administration said in a message to physicians and dentists.

The three drugs are: tetracycline, chlortetracycline, and oxytetracycline. There is no evidence to date that a fourth drug, demethylchlortetracycline, causes the discoloration, FDA said.

Manufacturers of the three antibiotics have been advised to take immediate steps to include the following warning in the labeling of the drugs:

(Name of drug) may form a stable calcium complex in bone-forming tissue with no serious harmful effects reported thus far in humans. However, use of ----- during tooth development (last trimester of pregnancy, neonatal period, and early childhood) may cause discoloration of the teeth (yellow, gray, brown). This effect occurs mostly during long-term use of the drug, but it has also been observed in usual short-treatment courses.

The discoloration is believed to be permanent. Its frequency has not been determined as yet. FDA emphasized that there is no evidence that the discoloration involves any hazard to health.

FDA has been investigating reports associating discoloration of children's teeth with tetracycline drugs for several months. The investigations consisted of literature reviews and personal contacts with medical experts in the field, including authors of the literature articles, and contacts with the manufacturers. These studies showed that there is a positive correlation between the discolorations and the use of the drugs, either by the mother during her last trimester of pregnancy, or by the child during the neonatal period, infancy, or early childhood.

Chlortetracycline was the first of the tetracycline group of broad spectrum antibiotics which came into use in the early 1950's. They are widely used for such diseases as the pneumonias, staphylococcic infections, meningitis, Rocky Mountain spotted fever, scrub typhus, tick fever, types of dysentery, and for venereal and urinary tract

infections. Due to their general freedom from side effects, the tetracyclines are frequently administered to children. Chlortetracycline and tetracycline have been subject to FDA testing and certification since they were first marketed. Oxytetracycline (Terramycin) will be certified beginning May 1 under the provisions of the Kefauver-Harris Drug Amendments of 1962 which require FDA certification of all antibiotic drugs. □

Children's Outpatient Tumor Clinic Opened

THE PEDIATRIC SERVICE of the University of Oklahoma Medical Center, Oklahoma City, has established an outpatient tumor clinic called the Children's Oncology Clinic. This name was chosen because the use of titles such as "tumor, cancer, etc." has created impressions that complicate the management of patients in the pediatric age group.

The clinic meets on Mondays at 1 p.m. in combination with the Pediatric Hematology Clinic. Although the clinic is coordinated by the Pediatric Service, other services such as Surgery, Neurosurgery, and Orthopedics, Urology, Radiation Therapy, etc., also participate.

The Pediatric Service of the University of Oklahoma Medical Center has joined a number of other teaching hospitals to form a group, The Southwest Cancer Chemotherapy Study Group, in a cooperative study of childhood leukemia and solid tumors, including lymphomas, Wilms' tumors, neuroblastomas, bone tumors, brain tumors, soft tissue sarcomas, and other malignancies. A number of cancer chemotherapeutic agents are available through The Children's Oncology Clinic for the treatment of malignancies in children. These chemotherapeutic agents are supplied free and all patients are

returned to their referring physician after treatment.

Arrangements for care of these patients can be made by calling or writing the Department of Pediatrics, Children's Memorial Hospital, University of Oklahoma Medical Center, 800 N.E. 13th, Oklahoma City, Oklahoma, telephone CE 6-1366.

The Power to Tax

GOOD, now it's finished, the ordeal's over, April fifteenth has come and gone, and another 1040 is completed, double-checked, signed, and with a sigh of relief, mailed to the Internal Revenue Service Regional Office.

You're happy it's behind you, you think; but on second thought, maybe satisfied or, still better, relieved is the better word. For you remember the cycle is by no means completed, that another phase begins, that for some taxpayers there will be challenges of their returns—"audits," as they are called. That's right, come to think of it, your neighbor down the street was audited, and only last week a fellow at the office was called in. Your brow furrows a bit, for you realize that your return—albeit an honest return, you'd swear on a Bible to that—has to undergo the closest scrutiny: Human and electronic eyes will probe every line and figure.

First, some clerk or clerks will give it a rudimentary check: Are the schedules enclosed? Are the W-2's attached? Did his wife sign? Is the arithmetic right? That kind of thing.

Then, the more incisive check by an IRS agent or agents: Did he elect the Standard Deduction, or did he itemize? Are his contributions in line: Is his dividend credit and exclusion in good order? What about his "T & E" (business travel and entertainment expense)? Hmm, here's an item—took his wife to a convention, but she served as official hostess. Well, that may be all right . . .

Now, the most probing check of all—the Machine. To the big IBM 7090 you are but a number: no Mr., Mrs., or Miss—a number—136-14-6928. Your return will be scrutinized and memorized electronically. Perman-

ently. The Machine will in effect "process" a part of your life forever; your return sets down, after all, a precious and intimate year of your existence: Here you list by name your wife, your children and their ages, and other dependents. And your debts—the interest paid on the home mortgage, the interest on the auto loan, the interest on the note at the bank and on your margin account at the stockbroker. And on T & E—your trip to Phoenix, the lunch with the agent of XYZ Co., the annual convention in Chicago, and much more. And your contributions—how much you gave to the American Red Cross, the Boy Scouts, the Salvation Army, the Memorial Church, and so on. All this is fed into the Machine, into its memory unit, permanently, along with all your sources of income, the stocks you own, your bonds, your bank accounts, everything . . .

WITHOUT A SEARCH WARRANT

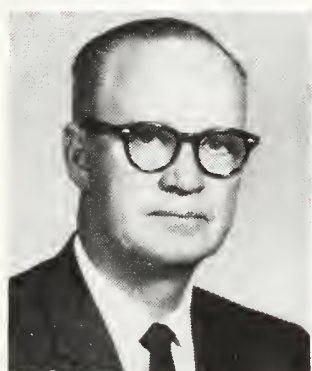
So you reflect, and you're disconcerted. The Bill of Rights guarantees the privacy of your papers and effects against a possibly inquisitorial government. Says the Fourth Amendment: "The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized." And now you divulge all, and must be prepared to defend all with canceled checks and other documentation, and without any search warrant. And another thing: In audits the burden of proof is on the taxpayer—in effect, he is assumed to be guilty and must prove himself innocent, thereby reversing a centuries-old principle of Anglo-American jurisprudence. It is discomforting, very.

Especially the size of the tax bite, the swiftly ascending "graduated" rates. You're not so old that you can't still remember when the income tax was relatively mild. That was before World War II. The tax didn't hurt so much then. There was no withholding tax. No estimated income forms. No quarterly payments.

Years ago—when was it?—in the late 40's, after the war—you were just plain mad

(Continued on Page 274)

"Nine Out of Ten Doctors?"



There are increasing problems and projects facing the administration of the association—too many to be handled by the ten per cent of the profession who have carried us for so many years. The other nine out of ten must contribute more thought and energy if we are to be an effective organization.

We have two basic fields of endeavor: One by definition and tradition, that of providing the best medical care within our power to give; and the other, of more recent vintage, brought forcibly to us by events connected with the widespread socio-economic changes—the preservation of the rights and freedoms so necessary for a free people and a free profession.

Translated into an annual program the first field of endeavor would require us to continue and attempt to strengthen all of the fine programs now in progress or on order by the Board and the House of Delegates. Such programs as our postgraduate courses, both regional and T-V, the annual scientific portion of our meetings; the recruitment program for medical students; good liaison with the School of Medicine and good relations with the student AMA, and the support of the AMAERF are to be emphatically stressed.

Intermediate functions that tie the two basic phases together are those that will give over-all strength to our association and that will improve our public image. The first order of business here will be for our official staff to establish and maintain constant relations and liaison with all the county societies, and with each individual physician. This must necessarily be a preliminary to the next order which will be to assume our role in all public affairs that have to do with medicine and medical care, which in turn will necessitate our participation in many other public affairs. We have an educational and salesmanship job before us: First to educate and sell our members and secondly to carry the message to the public. We must get the idea across to every citizen that our fight for freedom is their fight; that when we lose liberties, they lose liberties; that all freedom loving groups are on the front line together, and that each group has a segment of defense, but our segment is flanking theirs and vice versa, so that we each are supporting the other.

All of which brings us to the year's biggest problems, those of the second field of endeavor—the socio-economic phases—or more specifically, King-Anderson type legislation.

It is my considered opinion that our first and best source of help comes from within our own group. We must carefully appraise our own activities to show that we are

practicing what we preach. We must come face to face with realities and accept the fact that we are now dealing and working with many things that are quite foreign to us and to our basic tenets. We must also face the fact that many of these things are probably here to stay in some form or another. Consequently, such things as third parties in the practice of medicine, for example, must be carefully reviewed and appraised on such yard sticks as: Are their philosophies in keeping with a free people? Are they voluntary or compulsory? Are they controllable and flexible? Do they tend to actually interfere with doctor-patient relationships? And do they actually interfere with the individual physician's right and duty to practice his profession for the benefit of the patient's health? Do they interfere with the patient's right of free choice of physician? Do they deprive the physician of his right to negotiate and decide his fees?

A careful appraisal of such facts will then give us an opportunity to enlist help from those groups which do not clash with our philosophies and to oppose those which do. Help would furthermore materialize, if in acceptance of some of these groups as allies we can improve our image into one of a profession willing to help positively to solve problems, and not to be opposed to everything not in keeping with our ideas of the past when no such socio-economic problems existed.

So that, returning to the original premise: That our profession has two basic phases, whether we like it or not, we must conclude that in order for us to accomplish the objectives of our first purpose we must so fit ourselves into the picture as it exists today as to be able to live with the problems of today. If we are to maintain leadership in the actual practice of medicine, it will take the dedication of *all* physicians to meet the responsibilities associated with the present socio-economic upheaval. Whoever assumes these responsibilities will control the profession. Let it be us! □

Joe L. Quet, M.D.

Pulmonary Embolism Following External Cardiac Massage

CHARLES E. COOK, JR., M.D.

A bone marrow embolus in a large pulmonary artery found histologically after autopsy demonstrates that artificial circulation of blood is possible by external cardiac massage.

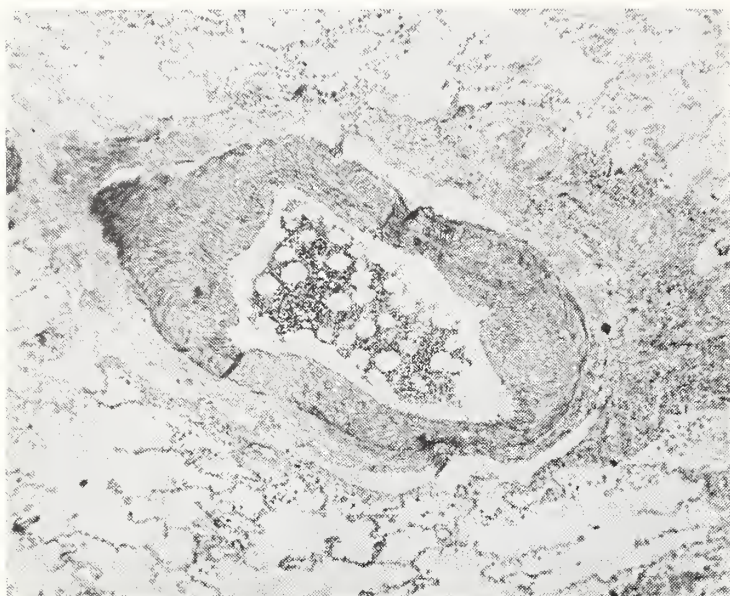
THIS CASE IS presented because of the unique findings at autopsy on an elderly patient who died suddenly with acute heart failure.

CASE REPORT

This 65-year-old white male was admitted to the hospital on April 6, 1962 with chief complaint of "aching in my stomach." He gave a history of having developed an aching in the upper abdomen three weeks prior to admission and this presenting symptom had been about the same during the two week period prior to admission. It was not affected by food; there were no symptoms of sour eructations, flatulence, nausea or vomiting. His bowel movements had been regular with no melena. There were no urinary tract symptoms. When asked to describe his symptoms more clearly, he replied, "It is just a sickly, weak, nervous feeling in my stomach."

The past history, taken from a previous admission to this hospital, revealed a diagnosis of arteriosclerotic heart disease with cardiac enlargement. Serial electrocardiograms at that time showed left heart strain, left ventricular hypertrophy and residuals of an old anterosseptal myocardial infarction. The chest x-ray taken August 14, 1961 was identical with the chest x-ray taken April 9, 1962: There was tremendous enlargement of the heart with the main enlargement being left ventricular. The hilar trunks were dilated. There was a calcific plaque in the aortic knob. The lung fields were clear. Upon discharge in August, 1961 the patient was placed on a maintenance dose of digitoxin consisting of 0.2 mg. daily.

A complete physical examination April 9, 1962 revealed a well developed, well nourished white male who did not appear acutely ill. He was 66 inches tall and weighed 132 pounds. His temperature was 98 degrees; the pulse was 112 and the blood pressure was 140/82. A few moist rales were heard in each lung base. The heart was markedly enlarged downward and to the left with a loud blowing systolic murmur at the apex which was in the mid-axillary line at about the seventh intercostal space. The heart rhythm was irregular but equal to the pulse. Otherwise physical examination was within normal limits. A diagnosis of arteriosclerotic heart disease with cardiomegaly, Class III, was made.



Low power photomicrograph (20X) of bone marrow embolus in the lumen of medium sized pulmonary artery.

Routine laboratory tests including serology, hemogram and urinalysis were made April 9, 1962 and were within relatively normal limits. An electrocardiogram had been ordered but the patient expired before it could be done.

The patient was admitted at 5:30 p.m. April 6, 1962. He was kept in bed for two days and given digitoxin 0.2 mg. daily. His symptoms remained minimal; he did not request any of the medication which was ordered for pain, and on April 8th he was allowed to be ambulatory. After eating breakfast on April 10, 1962 he was shaving himself in the ward bathroom when suddenly he slumped, dropping his razor. The nursing attendant, who was standing beside him, caught him gently so that he did not hit the floor. The patient was placed on a stretcher where the author saw him within 30 seconds and he was transferred immediately to his bed some 30 feet distant. Even though no audible heart sounds were present, external cardiac massage was begun within 60 to 90 seconds with the point of pressure directly over the mid-sternum. At the same time an adequate airway was established and oxygen was started by positive pressure oxygen mask. One-half milliliter of 1:1000 solution of adrenalin chloride was injected directly into the heart and five minutes later another one-half milliliter of 1:1000 solution of adrenalin was injected into the heart.

External cardiac massage was performed continuously for fifteen minutes. The patient did not respond in any manner; the pupils remained dilated and there was no corneal reflex response to stimulus. The patient was pronounced dead at 8:45 a.m. April 10, 1962 due to acute heart failure secondary to severe arteriosclerotic heart disease.

The most pertinent findings at autopsy were: (1) Bone marrow embolism to the lung; (2) Coronary atherosclerosis, extensive, with occlusion of right coronary artery; (3) Myocardial fibrosis, ischemia, marked; and (4) Cardiac enlargement, left and right ventricular hypertrophy.

DISCUSSION

The cardiac resuscitation method used in this case was very similar to the "Closed-Chest Cardiac Massage" maneuver recently described by Kouwenhoven.¹ His recent work, along with that of his colleagues, has proved that this procedure is often effective as a life-saving measure. The simplicity of this method makes it a valuable asset in the general teaching of first-aid. As Kouwenhoven¹ says: "It is at once readily applicable, safe to use, and requires a minimum of gadgets." Cardiac massage is not without complications, however, but these may be reduced by proper training of those individuals who are potential users of the maneuver.

Traumatic complications of external cardiac massage such as rib and sternal fractures, hematomas, hemopericardium, laceration of the liver, and rupture of the heart have been previously described.^{2, 3, 4, 5} James R. Jude³ reported bone marrow emboli to the

Since his graduation from the University of Oklahoma School of Medicine in 1942, Charles E. Cook, Jr., M.D., has been certified by the American Board of Preventive Medicine.

Doctor Cook is a member of the American College of Physicians, the American College of Preventive Medicine, the Aero-Space Medical Association and the American Public Health Association.

pulmonary arteries in over 50 per cent of the patients examined at autopsy. The histopathological description of the lungs in this case reported a bone marrow embolus in a fairly large pulmonary vessel with no reaction surrounding it. This complication probably was the direct result of the external cardiac massage and was the only one listed in the autopsy report. One can only speculate concerning the clinical effect this finding might have had if the patient had lived.

Clinical evidence of life is the prime criterion for the effectiveness of cardiac massage. If the patient does not respond, the external cardiac massage must be considered ineffective; however, establishing artificial circulation of blood elements by this maneuver can be attested in this case by the finding of bone marrow in a pulmonary vessel.

SUMMARY

A case report of pulmonary embolism following the use of external cardiac massage has been presented. The patient did not survive. However, valid evidence, shown by the histopathological report from autopsy of a bone marrow embolus in a large pulmonary artery, demonstrates that artificial circulation of the blood is possible by this method of cardiac resuscitation. □

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- Veterans Administration Hospital, Muskogee, Oklahoma

WIDER SOCIAL SECURITY BENEFITS?

Commissioner Robert M. Ball of the Social Security Administration reported that an advisory council will be appointed in the near future by the Secretary of Health, Education and Welfare to draft a program to expand social security taxes and benefits.

Mr. Ball released the information during a speech on May 16th before a group of 150 New York and New Jersey executives of the Department of Health, Education and Welfare. He said the contemplated advisory council would consider increasing the social security taxable wage base, revising disability payments to cover short-term disability, and gearing benefits to the actual value of the dollar at the time of retirement and later.

Furthermore, Mr. Ball predicted that health care of the aged would be added to

the social security program this year or next year at the latest.

If Ball's statements prove to be true, the American Medical Association says it is apparent that the Department of Health, Education and Welfare is already disregarding the views on social security taxes expounded by its former secretary, Senator Abraham Ribicoff (D., Connecticut). While heading the Department of H.E.W., Mr. Ribicoff stated that he believed a ten per cent social security tax (five per cent employee and five per cent employer) would be the maximum tax of this type which would ever be necessary. Under the planned increases provided for in the present social security law—disregarding the possible passage of a social security health bill—the social security taxes are already scheduled to go up to nine and one-fourth per cent of payroll in 1968.

Anabolic Activity of Ethylestrenol*

C. K. WISDOM, M.D.
PHILIP J. CAMPBELL, M.D.
A. R. STOUGH, M.D.

AN EXAMPLE of an unexpected finding which sometimes results from "molecule manipulation" is seen in the development of a unique series of 3-deoxo-19-nortestosterone steroids (estrenols).¹ Theoretically, these compounds were presumed to exhibit little or no physiologic activity since this is thought to be a function, at least in part, of a 3-keto or hydroxy configuration.² Instead the reverse appears to be true. For example, ethylestrenol (figure 1) was shown to be a more potent anabolic agent than its 19-nortestosterone counterpart norethandrolone when compared orally by the levator ani assay in rats.³ Of greater significance is the fact that in human metabolic studies it produced nitrogen retention in doses of less than 0.1 mg./Kg. of body weight per day.⁴

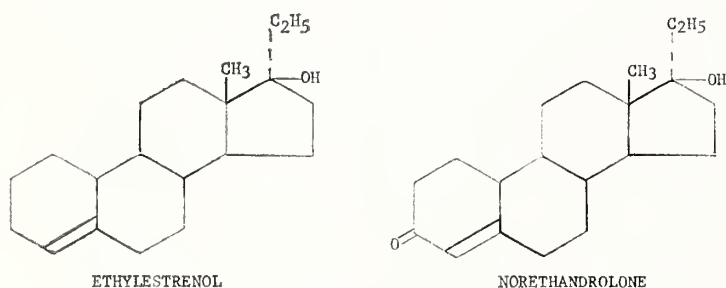


Figure 1.

In common with other orally effective anabolic and progestational steroids, ethylestrenol is alkyl substituted at C₁₃. In addition to conferring oral activity it is thought that this substitution also accounts for the derangements in liver function tests reported for these steroids. Usually this is manifested by reversible increases in B.S.P. retention and has been seen following the use of norethandrolone (Nilevar®), methandrostenolone (Dianabol®), fluoxymesterone (Halotestin®), norethindrone (Norlutin®), norethyndrel (Enovid®) and methyltestosterone among others.⁵ The present study was undertaken to determine (a) the minimal effective dose of ethylestrenol for weight gain and, (b) effects on liver function tests.

METHODS

The study was performed in two consecutive 60 day periods. Initially ten normal adult male volunteer prisoners ranging in age from 24 to 43 years were selected to test two dosage levels. On the basis of animal and human metabolic studies it seemed reasonable to predict that a five mg. daily dose would be satisfactory and this was used as the starting dose. This dose was arbitrarily tripled to provide the initial challenging dose for liver function studies. When the results of this study were known a second group was selected to explore the effect of smaller doses on weight gain.

Twenty volunteer subjects, equally divided as to sex, were selected on the basis of being

*Organon Inc.

Subject	Daily Dose	Days				Total Change
		0	7	30	60	
1	5 mg.	149	156	156	161½	+12½
2	5 mg.	194	198	198	197	+3
3	5 mg.	131	134½	135	135	+4
4	5 mg.	174	176	175	176	+2
5	5 mg.	158	158	159	163	+5
6	15 mg.	194	200	202	205	+11
7	15 mg.	180	184	186	184½	+4½
8	15 mg.	194	197	200	203	+9
9	15 mg.	142	152	152	155	+13
10	15 mg.	138	146	149	149½	+11½

Table 1
Group 1: Weight Changes

at least 20 per cent underweight according to the weight tables of the Metropolitan Life Insurance Company. The males were volunteers selected from the same prison population as before so that diet and environment did not vary. Their ages, ranging from 18 to 75 years, averaged 42.3 years. The females were private patients under treatment for a variety of minor medical complaints each of whom had expressed a desire to gain weight. Their ages, ranging from 31 to 77 years, averaged 52.1 years. Each patient was advised to continue her usual dietary habits during the study.

All subjects received, initially, a single daily four mg. dose of ethylestrenol. This dose was then doubled in those subjects who

did not respond to the original dose with satisfactory weight gains (table 2).

Laboratory studies consisting of urinalysis, complete blood count, hematocrit, serum bilirubin, alkaline phosphatase, serum transaminase (SGOT) and B.S.P. were performed on each subject at 0, 30 and 60 days. The latter was done in the usual manner using five mg. of dye per Kg. of body weight with blood sampling at 45 minutes. Weights were recorded weekly and are reported to the nearest half pound.

RESULTS

Data derived from studies performed in the first group are presented in table 1. It can be seen that, with one exception, rather substantial weight gains were noted at each dose level by the end of the first week of therapy. These gains persisted throughout the course of study in the majority of cases and for the first post-treatment week as well providing some evidence that the gains were real and not due to fluid retention. All of the liver function tests remained within normal limits during the study period. Without exception each subject noted a marked increase in appetite and food intake.

Subject	Sex	Daily Dose	Days								
			0	1	2	3	4	5	6	7	8
1	M	4	119	121	121	→				128	117*
2	M	4	135	136	139	140	142	142½	143	145	146
3	M	4	119	125	124	126	130	→			128
4	M	4	141	148	152	153	153	→			160
5	M	4	133	138	136	136	→				138
6	M	4	142	144	148	148½	149	150	150	151	152
7	M	4	142	143	146	148	149	148	150	150	151
8	M	4	107	106½	109½	106½	→				109
9	M	4	122½	123½	124½	124½	→				129
10	M	4	126	126½	126½	127	128	128	129	→	130
11	F	4	103½	103½	105	104	103½				
12	F	4	103	103	→						107**
13	F	4	89	86½	→						88
14	F	4	104	104	106	108½	110	→			111**
15	F	4	110	110	108	107	108	→			112
16	F	4	114	112	→						116
17	F	4	87	88½	89½	92	91	90½	→		90
18	F	4	124	127	125½	→					131
19	F	4	108	108	111	→					118
20	F	4	97	97½	→						101

Arrow denotes start of 8 mg. dose.

*11 pound weight loss occurred over 10 day period because of pneumonia.

**Subjects had influenza during course of study.

Table 2
Group 2: Weekly Weight Changes

The results of the studies in the second group of 20 patients are listed in tables 2 and 3. Greatest weight gains were noted in the male subjects who received a daily dose of four mg. Gains in excess of those reported for this dosage level were seen in only three of the seven subjects who received eight mg. daily (table 2). Again most males showed demonstrable weight gains after one week of therapy.

In the female subjects, however, weight gains were somewhat smaller averaging 4.9 lbs. for the 60 day period. The rate of gain was slower than in males despite the use of the higher dose in each case. The reason for this difference is not clear although it might be related to differences in age and dietary intake. Subjects 13, 15 and 16, for example, were 77, 76 and 71 years of age respectively and they responded poorly to the drug. Since accurate assessment of dietary intake and quality of foodstuffs was not possible in the females, it is entirely possible that these might have been deficient in one or more respects.

For the first time, minor to moderate changes were noted in liver function studies in eight subjects and these data are listed in table 3. These data show that the greatest changes occurred, as might be expected, in B.S.P. retention. Significantly, five of the seven subjects showed decreases in retention despite continuation of drug administration at the same or even higher dose levels. The probability is that this represents the reversible type of cholestasis commonly associated with the clinical use of these anabolic steroids. Similar results have already been re-

C. K. Wisdom, M.D., a 1955 graduate of the University of Oklahoma School of Medicine, is now in private practice in McAlester.

A 1960 graduate of the University of Oklahoma School of Medicine, Philip J. Campbell, M.D., is now in general practice in McAlester. Doctor Campbell is a member of the Alpha Omega Alpha, the Sigma Xi, the Society of Experimental Biology of Medicine, Southwest Section, and the American Geriatric Society.

A. R. Stough, M.D., a McAlester general practitioner, graduated from the University of Tennessee School of Medicine in 1936.

ported in children.⁶ Whether Subject 17 should be included here is debatable since the only abnormality noted was a B.S.P. retention of seven per cent which some consider the upper limit of normal.

The only other change worthy of note was observed in eight subjects whose hemoglobin and hematocrit values showed rather substantial increases while receiving the drug. Hemoglobin increases ranged from 1.0 to 3.0 Gms. and hematocrits from 1.0 to 6.0 per cent. Stimulation of erythropoiesis by anabolic agents has been reported previously,^{7, 8} and these findings suggest that ethylestrenol is also active in this respect.

DISCUSSION

With few exceptions the history of new drug developments has been one of step-wise

Subject	Sex	B.S.P. (%)				Bilirubin (Mg.%)				SGOT	
		Days				Days				Days	
		0	30	60	0	30	60	0		30	60
1	M	4.7	26.5(8)	15.5(8)	0.7	1.2	1.4	28		12	37
2	M	2.0	12.7(4)	12.5(4)	0.3	0.7	0.7	22		25	50
4	M	3.0	13.5(4)	16.0(8)	0.1	0.6	1.0	15		7	16
5	M	0.7	7.7(8)	17.5(8)	0.3	0.6	1.2	12		20	62
6	M	—	—	—	0.7	0.9(4)	1.5(4)	22		22	50
15	F	—	10.0(4)	7.0(8)	—	1.3	1.1	—		59	34
16	F	6.0	18.0(8)	14.0(8)	0.5	1.1	1.1	20		20	65
17	F	0	7.0(4)	6.0(8)	0.3	0.5	0.5	20		17	15

Number in parenthesis denotes dose subject was receiving at time of test.

Table 3

Liver Function Tests

progression. There are many examples illustrating how a single molecular change can prove advantageous in terms of increased potency and/or decreased toxicity, lower cost, etc. The synthesis of ethylestrenol provides another recent example of molecular alteration which appears to be beneficial.

The results reported here and elsewhere⁶ indicate that ethylestrenol exerts satisfactory anabolic activity as measured by weight gains in daily doses as low as four mg. It is possible that smaller doses might be effective also.^{6, 10}

Significant weight gains have been reported following the use of norethandrolone in daily doses of 20 and 25 mg.¹¹ While a direct comparison was not made in our study these findings suggest that ethylestrenol may be five to six times more potent than norethandrolone on a weight basis. This is in accord with the animal data. The effectiveness of this low dose also confirms the results obtained in metabolic studies.

Of the orally active progestational or anabolic agents in current use, norethandrolone is reported to be the most toxic.⁵ In one reported series, for example, increased B.S.P. retention occurred in 74 per cent of a total of 47 cases.¹² As with methandrostenolone there appears to be a definite relationship between dose and degree of B.S.P. retention and serum transaminase activity.¹³ It is difficult, in actual practice, to determine the significance of these changes in liver function tests since, apart from cholestasis, biopsy material has not revealed with any degree of regularity a pattern consistent with hepatocellular damage. The long-term extensive use of these agents argues in favor of their inherent safety despite such abnormalities.

Our data indicate that ethylestrenol also possesses the property which is common to all C₁₇ alkyl substituted steroids of altering hepatic function tests. This appears to be reversible in most instances despite continuation of the drug. It is our feeling that

ethylestrenol is at least as safe as the related steroids in current use. Final assessment, however, must await more extensive use and further study.

SUMMARY

1. Ethylestrenol appears to be a safe, potent anabolic agent when measured in terms of subjective responses and weight gain.

2. Doses of less than 0.1 mg./Kg. of body weight are capable of producing significant weight gain, often within the first week of therapy.

3. Reversible B.S.P. retention was noted in seven out of 30 subjects. The degree of retention, however, decreased in five of the seven subjects when therapy was continued at the same or even higher doses.

4. Clinical evidence of hepatotoxicity was not seen in any subject despite B.S.P. retention.

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115 East Washington, McAlester, Oklahoma

Extra-Cranial Causes of Strokes

Diagnosis and Treatment*

SAM N. MUSALLAM, M.D.

*"It is harder to unteach than teach."**
The diagnosis of extra-cranial causes of strokes is relatively simple if the practitioner only thinks of this possibility. All that he needs is common sense with a good pair of ears to listen to the patient's history and to abnormal murmurs (bruits) in the neck.

*Zuhdi

A FEW YEARS AGO, the attitude of the medical profession towards strokes was that of pessimism, indifference and a "hands-off policy." The treatment was at best "conservative." It was felt that strokes almost invariably resulted from occlusion or hemorrhage of the middle cerebral or other intracranial vessels.

However, during the last decade, the importance of atherosclerosis of the carotid and vertebral arteries in the neck as a cause of cerebral ischemia and infarction has become recognized. And, since many patients with symptoms due to this pathology are seen initially by the general practitioner or internist, increased awareness and knowledge of this condition seems warranted.

The incidence of carotid narrowing or occlusion in routine, unselected autopsies may be as high as 9.5 per cent,³ whereas 39 per cent of patients with cerebral vascular disease may have significant carotid stenosis.^{5,11} Fields, *et al.*² found that 25 per cent of patients with cerebro-vascular disease have extra-cranial occlusive disease;² significant atherosclerosis in the internal carotid artery has been found in 46 per cent of patients over 45, and as many as 80 per cent of older patients had atheromas.⁹ Atherosclerotic plaques occur most frequently in well-defined sites of the internal carotid vessels; the most common site is in the region of the carotid sinus, usually at the origin of the internal from the common carotid, or a few centimeters distal to this point.⁸ Atherosclerotic plaques of the vertebral basilar arterial system are usually more diffuse. The commonest site is the basilar artery itself. Isolated plaques of the proximal portion of the vertebral artery are amenable to surgery; so are those of the internal carotid in the neck.

DIAGNOSIS

Diagnosis is usually not difficult and is made by: 1. Symptoms and signs 2. Palpation and auscultation of the neck vessels; 3. Electroencephalography; 4. Ophthalmodynamometry; 5. Arteriography.

1. *Symptoms of internal carotid insufficiency are:* Transient cerebral ischemic episodes; transient unilateral motor or sensory

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impairment; transient aphasia or dysphagia; ipsilateral impairment of vision; weakness of side of the body or upper extremity; unilateral sensory disturbances (numbness and paresthesia); difficulty in communication; organic personality changes; seizures (nearly always unilateral); headaches and dizziness.

Some of the symptoms of vertebral basilar insufficiency are: transient dimness of vision or blindness; unsteadiness of gait; clouding of consciousness; dizziness, confusion and sudden syncope; "drop attack"—sudden loss of tone in the legs with collapse; dysarthria; ptosis and bilateral motor or sensory phenomena.

2. *Palpation and Auscultation of the Neck Vessels*: Palpation is used to detect the decrease or difference in pulsations or absence of pulsations. Auscultation of the carotid arteries on each side is performed with the bell of the stethoscope placed over the bifurcation of the common carotid artery, at the level of the thyroid cartilage, with the head in five positions: neutral, flexed, extended and rotated to the right and left. For auscultation of the vertebral arteries on each side, the bell of the stethoscope is placed just posterior to the sternocleidomastoid muscle, immediately above its clavicular origin, and the head held in neutral, flexed, extended and rotated to each side. Auscultation of the neck is the most important single examination to give clues to occlusive disease. The first and second heart sounds are transmitted to the great vessels and are normally heard on auscultation over the carotid and over the origin of the vertebral arteries. These are known as carotid and vertebral sounds. Gilroy and Meyer¹ found that carotid murmurs were the most frequently recorded abnormalities.

The presence of a carotid bruit appears to be a reliable indication of plaque formation or stenosis. A bruit may be heard over the contralateral vessel in complete occlusion of an internal carotid artery. A "to-and-fro" murmur indicates a severe degree of stenosis and a "sea gull," high-pitched murmur, usually indicates a pin-point lumen. Auscultation may detect relatively small plaques; such plaques may give symptoms by thromboembolism of fibrin and platelet thrombi, deposited upon them."

3. *Electroencephalography*: The electroencephalogram is not, on the whole, very helpful, except to exclude specific brain lesions. It may show non-specific changes, focal abnormalities (slow wave activity) on the side of the lesion. However, compression of the carotid on the uninvolved side may produce electroencephalographic changes or clinical symptoms.⁶

4. *Ophthalmodynamometry*: In occlusion of the carotid artery, the retinal artery pressure tends to be reduced on the side of the occlusion since the ophthalmic artery is a branch of the carotid artery. This can be measured exactly with an ophthalmodynamometer.^{13, 12} However, Meyer⁶ claims that it is a simple matter to use compression of the globe on each side with the finger during funduscopy and to observe the ease with which the retina blanches. In normal circulation, considerable pressure is required to abolish the retinal artery flow; while in occlusion of the carotid artery or in diffuse occlusive vascular disease, the retina blanches easily when the globe is compressed on the involved side.

5. *Arteriography*:¹⁴ This is the most reliable single diagnostic procedure and the most accurate in localizing the lesion. For some time, the neck was "No Man's Land." Neurosurgeons did not think the neck area was within their realm; and the vascular surgeons probably thought that if they included the neck vessels, which enter and supply the brain, within their field, they would be trespassing the rights of their colleagues.

Arteriography is performed either by direct carotid artery puncture or through the brachial artery. We have abandoned the di-

Sam N. Musallam, M.D., graduated from the American University of Beirut, Lebanon in 1937. His practice in Oklahoma City is limited to internal medicine, cardiology. He is Assistant Professor of Medicine at the University of Oklahoma Medical Center.

Doctor Musallam is a member of the American Society of Internal Medicine, the Oklahoma City Internists' Association, the Southern Medical Association, and Chairman, Cardiac-in-industry, of the Oklahoma County Heart Association.

rect carotid artery puncture and have resorted to the latter technique. Under local anesthesia the brachial artery is isolated and opened. A cardiac catheter is inserted and passed under fluoroscopic guidance into the ascending aorta and 50 per cent Hypaque is injected by pressure syringe. Biplane angiograms are performed of the four cervical vessels. The films are developed while the catheter is in place. If the injection is not satisfactory, or if more detailed information is needed, further injections can be made or "selective angio" performed. This consists in withdrawing the catheter and directing the tip into individual arteries or branches, injecting dye and taking more films. The catheter is then removed and the artery closed.

TREATMENT

1. *Surgical*: Surgery in the form of an endarterectomy and arterioplasty aims to restore optimal blood flow by removal of an obstruction. Thus, surgical therapy may be considered curative in that it not only reduces the incidence of repeated "small strokes," but also most probably prevents progression of the disease to the stage of carotid thrombosis and cerebral infarction with its devastating symptoms or death.^{5, 10}

2. *Medical therapy*, at best, is only palliative. Some authorities still believe in long term anticoagulants. The theoretical basis for such therapy is to reduce incidence of forward embolization from proximal plaques of the cerebral vessels in the neck. Such platelet deposition and platelet thrombosis is a striking feature of experimental cerebral thrombosis.^{6, 7} Anticoagulant drugs according to Meyer also appear to prevent adhesiveness of the blood elements which increases in zones of slowed flow. However, neither heparin nor the coumarines can dissolve a fibrin clot.

ILLUSTRATIVE CASES

Case 1: Mrs. M.R., a 63-year-old white female was admitted to Mercy Hospital, Oklahoma City, on January 7, 1962 because of

dizzy spells. These spells started a few weeks before her admission to the hospital; they were light at the beginning, but increased the last week, so much that she was unable to move alone without support. With these dizzy spells, she noticed staggering and episodes of weakness. A bruit was heard over both sides of the neck, more pronounced over the left carotid area. Arteriography was done via a catheter through the brachial artery. The arteriogram showed no visualization of the left vertebral and left internal carotid artery, and the right vertebral artery was stenosed at its origin (figure 1). Thus, it was felt that the patient had disease of both carotid arteries, obliteration of the left vertebral artery and narrowing at the takeoff of the right vertebral artery.

Considering the overall picture and symptomatology, it was felt that repair of the right vertebral artery should be attempted first. So on January 17, 1962 an endarterectomy and widening of the right vertebral artery with a venous patch was done by Doctor Nazih Zuhdi and Doctor John Carey. The patient made an uneventful recovery. An

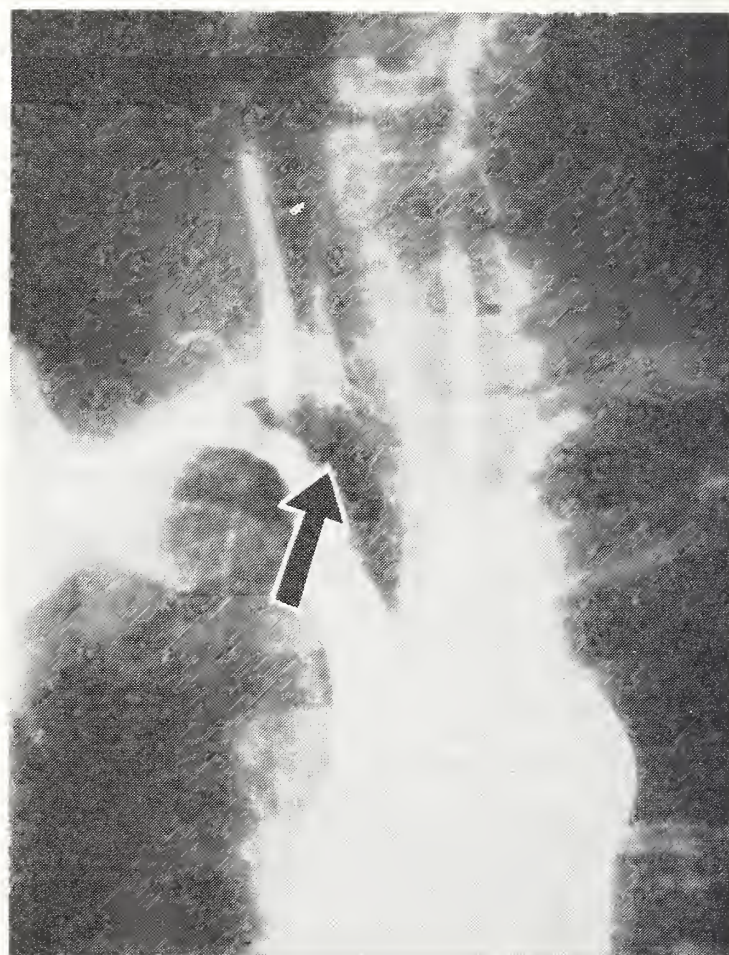


Figure 1. (Case 1—Mrs. M.R.) Arteriogram showing no visualization of left vertebral and left internal carotid. Right vertebral artery is stenosed at its origin (arrow).

interesting incident occurred 24 hours after surgery. The patient had been ambulated and as I entered the room she was crying. I asked the cause of her crying and she answered, "I am scared because I am not dizzy at all, even after standing up. I can't believe I could be cured so quickly." The patient was discharged from the hospital January 26, 1962, asymptomatic. She was readmitted February 15, 1962 when an endarterectomy and right carotid artery widening with tephlon patch were done, and again on March 3, 1962, left carotid arterioplasty was done. The patient is now asymptomatic and quite happy.

Case 2: Mr. L.N., a 63-year-old white male, retired butcher, was admitted to Mercy Hospital December 31, 1961. At 11 a.m. that day while talking with his daughter on the telephone, he suddenly became aphasic and unconscious. He regained his consciousness and speech within one hour. A similar episode occurred on Christmas Day, a week before and another December 30, 1961. The attacks followed the same pattern, when he suddenly lost his speech and became unconscious, recovering within 30 to 60 minutes.

When the patient was examined at the hospital, about two hours after this last episode, he was conscious, well-oriented and had no abnormal neurological findings. The only abnormality on physical examination was a bilateral bruit in the neck, more pronounced over the left carotid bifurcation. Thus, it was felt that the patient was suffering from cerebral vascular insufficiency. Spinal fluid examination and neurological examination failed to show any definite brain lesion. An electroencephalogram was interpreted as moderately abnormal, with a diffuse paroxysmal pattern. Carotid angiography on January 11, 1962 by a catheter through the brachial artery and injections of dye into the arch of the aorta and innominate artery showed filling defects in both internal carotid arteries and a small defect in the right common carotid artery (figure 2). On January 23, 1962 an endarterectomy and widening of the common carotid and right internal carotid artery with a vein patch were done by Doctor Nazih Zuhdi and Doctor Allen Greer. The obstruction in the right internal carotid artery was almost com-

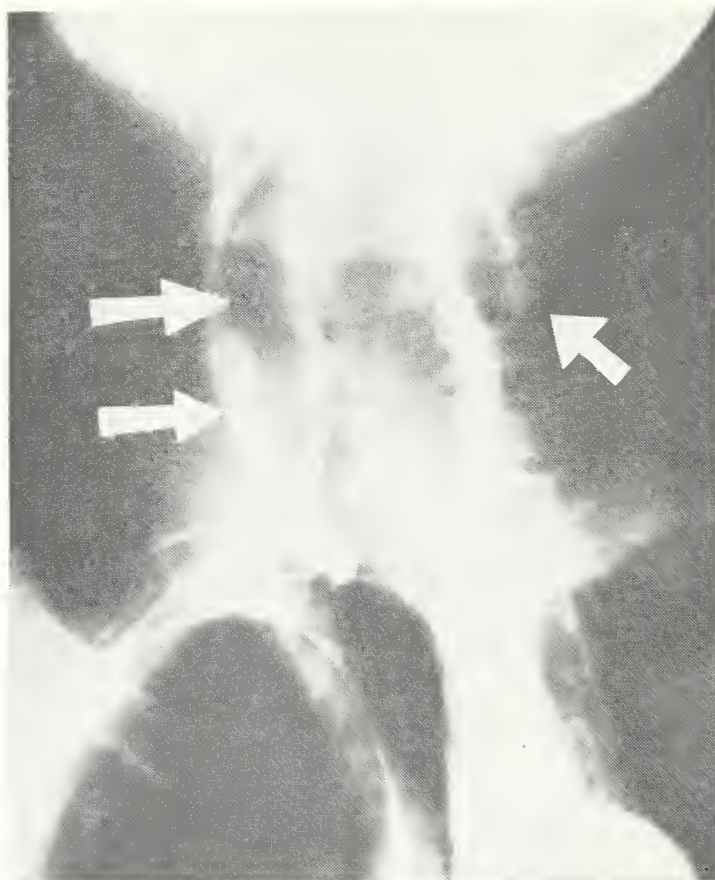


Figure 2. (Pt. L.N.) Arteriogram of cervical vessels. Injection made into arch of aorta shows filling defect in right common, and in both internal carotids.

plete. On February 21, 1962 an endarterectomy and widening of the left common and internal carotid was done. He made an uneventful recovery and since surgery has been asymptomatic and very happy.

SUMMARY AND CONCLUSIONS

1. Carotid and basilar arterial insufficiency is a recurrent disturbance of hemodynamics in which unusual physiologic stress may give rise to symptoms. Hemodynamic crises may result from lowering of blood pressure and changes in the viscosity or coagulability of the blood. Fibrin and platelet embolism from mural plaque of the arteries of the neck as a cause of symptoms is stressed by Meyer.
2. Atherosclerosis of the carotid and vertebral arteries, an important cause of transient cerebral ischemia and infarction, is amenable to surgical and medical treatment.
3. Palpation and auscultation of the neck vessels should be done routinely and an accurate diagnosis is mandatory before cerebral infarction occurs.

4. In adults, particularly those with transient neurologic symptoms, murmurs over the cervical vessels that are not transmitted from the heart are presumptive evidence of atherosclerotic disease of the neck and mediastinal arteries. Definitive diagnosis requires arteriographic study. □

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Pasteur Building, Oklahoma City, Oklahoma

STATEMENT OF PRINCIPLE

"As a physician, I will continue to render to all of my patients the highest quality of medical care of which I am capable, and I will assist my colleagues to do likewise.

"I will undertake to diagnose and treat patients only under conditions which allow me to practice to the best of my ability and which do not cause, or tend to cause, a deterioration in the extent or quality of care I am able to render.

"I believe that Americans will remain free only so long as our government does not abridge the rights and responsibilities of individual citizens; I believe that rights and responsibilities are inseparable.

"I believe that Americans who are able to care for themselves should not be made wards of government for the purpose of obtaining medical care, hospitalization, food, clothing, or for any other purposes.

"I believe that such governmental programs would subtract from the liberty of each American and that individual freedom is the purpose for which Americans instituted independent government on this continent.

"I believe that acceptance of payment from plans that curtail the individual's right to select health care and the individual's responsibility for such care would not be consistent with my beliefs in freedom and the best practice of medicine.

"My purpose in signing this statement is to add my voice to a plea to retain maximum freedom in the United States and to contribute to the further advancement of the care physicians are able to provide patients in this country."

Approved by OSMA House of Delegates, May 3, 1963.

Management of Incomplete Abortion

JOSEPH HARROZ, M.D.*

JAMES R. SCHRAND,

Captain, USAF (MC)

WILLIAM G. SUTLIVE,

Captain, USAF (MC)

WILLIAM C. HERNQUIST,

Colonel, USAF (MC) F.A.C.O.G.

*Is a thorough curettage
always a necessity?*

THERE ARE TWO basic methods of approach to the management of incomplete abortion, the medical and the surgical. The medical method consists of hospitalization, bed rest, oxytocics, antibiotics and blood replacement. The surgical approach consists of hospitalization, curettage under anesthesia, blood replacement and antibiotics. The advantages and disadvantages of the two methods may be easily summarized.

For the medical management there is claimed decreased sepsis, absence of the dangers and expense of anesthesia, but longer hospitalization and increased blood loss.

For the surgical management there is shorter hospitalization, decreased blood loss and decreased sepsis is claimed since

antibiotics. However, there remains the problem of anesthesia with this method. Recent literature suggests that surgical management is becoming the method of choice.^{1, 3, 4, 5, 9, 10, 12}

The purpose of this paper is to present and evaluate a method which has evolved at USAF Hospital Wright-Patterson. The essential feature of this method is sponge forceps evacuation of the uterine contents without the need of general anesthesia, hereafter referred to as the sponge forceps procedure.

METHOD AND MATERIAL

From January 1958 through April 1962, 329 patients were admitted to WPAFB Hospital with a diagnosis of incomplete abortion. Ninety-seven of these were managed by early curettage under general anesthesia. The other 232 patients were managed by the sponge forceps procedure which was performed in the treatment area of the emergency room or the ward. A review of these 232 cases is the purpose of this report.

A diagnosis of incomplete abortion was made on the basis of history and physical examination. The sponge forceps procedure was done only on those patients with dilated cervixes and gross products of conception in the vaginal vault or cervical canal. All but 15, or 6.4 per cent of the patients, were within the first trimester of gestation. Admission work-up included a complete blood count, urinalysis, and type and cross match

*Joseph Harroz, former Captain USAF, Wright-Patterson AFB, Ohio, Department of Obstetrics and Gynecology.

The contents of this article reflect the personal views of the authors and are not to be construed as a statement of official Air Force policy.

for 1000 c.c. of blood. Fifty mg. of Demerol was given intravenously and an intravenous infusion of 20 units of pitocin in 1000 c.c. of five per cent glucose in distilled water was started. With the patient in the lithotomy position and under sterile precautions, a vaginal speculum was inserted, the cervix was held with a single tooth tenaculum, and the placental tissue was removed from the uterine cavity was sponge forceps. All tissue was submitted to the laboratory for pathological examination. Special sterile packs containing sponge forceps, uterine dressing forceps, speculum, and single tooth tenaculum were available in the treatment areas.

Most of the patients complained of moderate low abdominal pain during this brief procedure. After 12 to 36 hours of observation in the hospital, the patients were dismissed if they were afebrile, if vaginal bleeding was minimal, and if they were in good condition otherwise. They were given further medication such as iron, ergotrate, and antibiotics as indicated. They were told to report any unusual symptoms such as excessive or prolonged bleeding, pain, fever, or foul lochia.

Due to the constant turnover of the house staff personnel, this regimen was not strictly adhered to in all of the 232 cases upon whom this procedure was performed; however, variations were so slight that all cases are included in this study.

RESULTS

There were no deaths in this series. The average hospital stay was 1.53 days. The average hemoglobin level on admission was 12.8 grams per cent. Six patients, or 2.5 per cent, were clinically considered to be in early shock secondary to blood loss. Twelve patients, or 5.2 per cent, received blood transfusion. A total of 19 units of blood was administered. The largest amount of blood given to a single patient was 1500 c.c. No blood transfusion reaction occurred.

Only ten patients, or four per cent, demonstrated morbidity, a temperature of 100.4° F. or above at any time during admission or hospitalization. Eight, or 3.4 per cent, of this series, were considered septic abortions.

Three of the eight were considered induced abortions. One patient had a pyelitis and one an upper respiratory infection which was believed to be the cause of the fever. Three of the eight septic abortions received blood transfusions, two units each. Cervical cultures taken on two patients with foul lochia revealed *E. coli* in one and *Staph. albus* in the other. All of these ten patients received antibiotics. Following evacuation of the uterine contents, the temperature rapidly returned to normal in the septic cases. None of the 232 patients in this series developed morbidity following the procedure. One hundred twenty-two patients, or 53 per cent, received antibiotics. Prophylactic antibiotics were administered in 112 patients, or 48.2 per cent. One hundred ten, or 47 per cent received no antibiotics.

COMPLICATIONS AND FOLLOW UP

Records are available on 121 patients, or 52.1 per cent, that returned for follow up examination. One hundred four were without complications secondary to the procedure. Sixteen patients, or 6.9 per cent, were readmitted within three days to six weeks following the sponge forceps procedure for dilatation and curettage because of persistent bleeding. Only one of these patients had an associated mild endometritis. Tissue examination revealed retained secundines in 14 and secretory endometrium in two cases. A repeat sponge forceps procedure was performed on one patient with persistent bleeding due to retained tissue with excellent results.

COMMENT

We feel that the sponge forceps evacuation of the uterine contents with the aid of

Joseph Harroz, M.D., who graduated from the University of Oklahoma School of Medicine in 1956, limits his practice to his specialty, obstetrics and gynecology.

Doctor Harroz is a Fellow-elect of the American College of Obstetrics and Gynecology, a member of the Oklahoma City Obstetrical and Gynecological Society, the Oklahoma City Clinical Society and the American Society for the Study of Sterility.

oxytocics in selected cases of incomplete abortion is a safe and effective method of management. This is borne out by the figures on blood loss, morbidity, and length of hospitalization.

The most important advantage of this method of management is that it can be performed rapidly and simply in the treatment room, thus reducing the need for curettage under general anesthesia. The most important disadvantage of this method of treatment is that the uterine contents are not completely evacuated in all cases, necessitating readmission for dilatation and curettage. In our series, 16, or 6.9 per cent, were readmitted for dilatation and curettage.

Infection is the leading cause of death in incomplete abortions.^{2, 6, 7, 11} During the past few years antibiotics have saved the lives of many women with septic abortion.⁵ Opinions differ, however, on the use of prophylactic antibiotics in aseptic cases.^{1, 7, 8, 9} In our series prophylactic antibiotics were given to 112 patients, or 48.2 per cent, and 110, or 47 per cent, received no antibiotics. Since none of our patients developed morbidity following this procedure, we are unable to support the routine use of prophylactic antibiotics in aseptic cases of incomplete abortion.

SUMMARY

1. An analysis of 232 cases of incomplete abortion treated by the prompt evacu-

ation of the uterine contents with sponge forceps and oxytocics is presented.

2. The merits of this method of management are discussed. It can be performed rapidly and simply, does not require general anesthesia, and, morbidity and blood loss are minimal. Hospitalization averaged 1.53 days.

3. The primary disadvantage of this procedure is that 6.9 per cent of the patients had to be readmitted for a dilation and curettage due to incomplete evacuation of the uterine contents.

Our series suggests that the use of prophylactic antibiotics in aseptic cases of incomplete abortion is not indicated. □

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A Review of the Diagnosis and Treatment of Megaloblastic Anemias*

RICHARD A. MARSHALL, M.D.

Megaloblastic anemias are due to deficiencies of folic acid and/or vitamin B₁₂. Correct initial diagnosis lessens confusion and results in gratifying improvement.

IN SPITE of the general decline of incidence of clinical vitamin deficiency states in this country, there has been a sustained interest in deficiencies of the specific vitamins, B₁₂ (cyanocobalamin) and folic acid (pteroylglutamic acid), which result in megaloblastic anemias. Interest in this area has been heightened by the gratifying fact that most cases of megaloblastic anemia can be successfully treated if the proper diagnosis has been established *prior* to beginning treatment. Suspicion of an underlying deficiency of vitamin B₁₂ and/or folic acid should be aroused by the findings of anemia characterized by the presence of oval macrocytic red cells, hypersegmentation of neutrophils, mild leukopenia and/or thrombocytopenia in the peripheral blood smear. If these findings are present the patient should have a bone marrow examination and the evidence of megaloblastic erythropoiesis searched for. Vitamin

B₁₂ or folic acid deficiency also results in abnormalities in the myeloid series and the characteristic cell is a giant metamyelocyte.

Megaloblastic anemia due to a deficiency of vitamin B₁₂ can seldom be distinguished from that due to folic acid deficiency purely on clinical grounds. If the patient has clear-cut evidence of combined systems disease of the spinal cord by history and physical examination, one can be almost certain that vitamin B₁₂ deficiency exists. Other signs and symptoms namely, anemic (weakness, dizziness, syncope, angina, pallor); gastrointestinal (sore tongue and mouth, dysphagia, dyspepsia, anorexia, weight loss, constipation and diarrhea); and neurologic ("senility" and peripheral neuropathy) are common to both folic and vitamin B₁₂ deficient states. Morphologically, it is impossible to distinguish these entities by examination of the peripheral blood or bone marrow since they appear identical. Certain laboratory procedures are now available which are of considerable value in this differentiation. Serum vitamin B₁₂ can be measured with great accuracy by bioassay techniques utilizing such microorganisms as *Euglena gracilis*,^{30, 56, 38} *Lactobacillus leichmannii*,²⁷ or *Ochromonas malhamensis*.¹⁸ Serum "folic acid" activity can be measured usefully by a bioassay utilizing *Lactobacillus casei*.^{4, 25} The determination of the urinary formimino-glutamic acid excretion after a histidine load by microbiologic,^{60, 6} enzymatic⁶³ or electrophoretic³⁴ methods is of value in establishing

*From the Department of Preventive Medicine and Public Health, University of Oklahoma Medical Center, 800 N.E. 13th Street, Oklahoma City 4, Oklahoma.

folic acid deficiency.^{15, 7, 42, 61} Since increased amounts of formiminoglutamic acid have been reported in urines of patients with uncomplicated pernicious anemia,⁶⁶ this test should be interpreted with caution. The results of these measurements are of great value in evaluating the untreated patient with megaloblastic anemia. In the treated or partially treated patient none of the above laboratory procedures are accurate. Determination of the absorption of radioactive cobalt labeled vitamin B₁₂ is of great value in proving the diagnosis of pernicious anemia in a patient who has been previously treated. It is usually unnecessary if the patient has been properly studied prior to treatment.

The most practical and satisfactory method⁴⁸ of differentiating these vitamin deficiencies is that of properly conducted therapeutic trials of small, "physiologic" doses of vitamin B₁₂ (one to five micrograms i. m. daily) or folic acid (25 to 50 micrograms i. m. daily).⁵⁹ To conduct therapeutic trials the only laboratory procedure needed is daily enumeration of reticulocytes which is widely available. The choice of proper doses of vitamin B₁₂ and folic acid is quite important. It is well established that megaloblastic anemias due to either vitamin B₁₂ or folic acid deficiency will respond to the usual (five to 20 milligrams daily) doses of folic acid. It has recently been shown that patients with megaloblastic anemia due to folic deficiency alone will respond to pharmacologic doses of vitamin B₁₂.⁶⁷

ETIOLOGIC CLASSIFICATION OF THE MEGALOBlastic ANEMIAS

I. Vitamin B₁₂ deficiency states

A. Insufficient dietary intake^{2, 54, 65}—this is a very rare cause of vitamin B₁₂ deficiency which occurs in strict vegetarians who do not eat animal products. The average daily intake of vitamin B₁₂ is in the order of 16 to 31¹² micrograms daily. The average daily requirement for this vitamin is probably 0.5 to one microgram daily.¹⁶ Since the average vitamin B₁₂ stores are about 1500 micrograms⁵⁷ one would not expect clinical vitamin B₁₂ deficiency from strict dietary insufficiency for a period of several years. Most of the few reported patients have presented with sub-acute combined systems dis-

ease of the spinal cord and little if any anemia. This is probably related to the fact that these people usually eat large amounts of green vegetables containing folic acid. It is thought that these large amounts of folic acid protect the marrow against megaloblastic erythropoiesis but do not correct the neural lesion.

B. Decreased Absorption

1. Absence of the intrinsic factor.

a. Classic pernicious anemia. This is generally thought to be a genetically influenced disease. Exact mechanism of transmission has not been established. The incidence of this disease varies considerably from one part of the world to another. The classic signs and symptoms of pernicious anemia may not always be present, especially since the wide spread use of multiple vitamin preparations. These preparations usually contain large enough amounts of folic acid to prevent the occurrence of fullblown megaloblastic anemia. It is now well established that subacute combined systems disease of the cord can progress in the face of folic acid treatment for pernicious anemia. Signs and symptoms of combined systems disease as they are presented clinically may differ considerably from that described in the text books. The neurologic presentation most frequently seen at present is one of an organic brain syndrome in older people which is usually called "cerebral arteriosclerosis" or "senility." Mental changes combined with absence of vibratory sense in the lower extremities or bilateral symmetrical paresthesias should make one suspicious of a vitamin B₁₂ deficiency. Areflexia and weakness are the rule rather than corticospinal tract signs and these

Richard A. Marshall, M.D., is assistant professor of Preventive Medicine and Public Health and assistant professor of Medicine at the University of Oklahoma School of Medicine where he graduated in 1955. He is certified by the American Board of Internal Medicine.

Doctor Marshall is affiliated with the Phi Beta Kappa, the Alpha Omega Alpha and the American Federation for Clinical Research.

when present usually consist only of positive Babinski signs. If the diagnosis of pernicious anemia is suspected, examination of the gastric juice with histamine stimulation is of value. If the patient fails to produce free hydrochloric acid after maximum histamine stimulation the possibility of pernicious anemia must be considered. One cannot absolutely rule out pernicious anemia because of the presence of free hydrochloric acid in gastric juice especially in children and young adults. There have been several well-documented cases of pernicious anemia in this age group.^{51, 62, 23, 37, 39} Vitamin B₁₂ deficiency in pernicious anemia is the result of absence of intrinsic factor in the stomach juice. The exact nature of the intrinsic factor has not yet been established.

b. Post-gastrectomy pernicious anemia regularly follows total gastrectomy^{44, 46} if the patient survives long enough. It occasionally follows partial gastrectomy^{3, 45} and in these cases re-examination of the stomach has usually shown gastric atrophy.

2. Generalized Intestinal Malabsorption

a. Idiopathic steatorrhea (non tropical sprue). Although the megaloblastic anemia associated with idiopathic steatorrhea is usually due to folic acid deficiency, there is frequently a secondary deficiency of vitamin B₁₂. Absorption of radioactive cobalt labeled vitamin B₁₂ is impaired and is not corrected by the addition of intrinsic factor. Absorption of carbohydrate and protein as well as fat is frequently impaired. Iron absorption may also be impaired. If both vitamin B₁₂ and iron are deficient, *hypochromic* macrocytic red cells may result. Vitamin B₁₂ alone usually will not correct this anemia. Celiac disease in children, which is thought to be the childhood form of idiopathic steatorrhea, has also been associated with megaloblastic anemia in which there are deficiencies of both vitamin B₁₂ and folic acid.⁵⁰

b. Anatomical diseases of the small bowel that may result in vitamin B₁₂ deficiency and megaloblastic anemia include blind loops, strictures, anastomoses, resections and jejunal diverticulae. Malabsorption of other nutrients is usually

present. In the case of blind loops and small bowel diverticulae the mechanism or production of this vitamin B₁₂ deficiency is unclear. It has been postulated that abnormal bacterial flora in these situations result in successful competition with the intestine for absorption of vitamin B₁₂.¹⁷ It has also been suggested that these bacteria might produce a toxic product which inhibits B₁₂ absorption.⁵⁵ Radioactive cobalt labeled vitamin B₁₂ absorption studies in this group show impaired absorption which is not corrected with intrinsic factor but can be corrected temporarily with the tetracycline group of antibiotics.⁵⁸ Surgical correction of the anatomic lesion, if feasible, is usually curative.⁸ In the case of terminal ileal resections or tuberculous or regional enteritis involving the terminal ileum, vitamin B₁₂ deficiency occurs frequently.³⁶ Vitamin B₁₂ deficiency from similar causes can also result from fistulae if this portion of the small bowel is bypassed.¹

3. Specific Malabsorption of Vitamin B₁₂.

a. Specific vitamin B₁₂ malabsorption in childhood has been described in three patients recently.^{31, 22, 13, 14} Each of these patients has also had proteinuria. It appears that some factor in the intestinal juice which is necessary for the absorption of the vitamin B₁₂-intrinsic factor complex is deficient in these patients.

b. The administration of sodium phytate to certain patients with idiopathic hypercalcuria has resulted in changes suggestive of megaloblastic erythropoiesis.²⁴ This is probably related to the fact that calcium is necessary for the absorption of the vitamin B₁₂-intrinsic factor complex. It is interesting to note that the poor absorption of radioactive cobalt labeled vitamin B₁₂ demonstrated by patients with idiopathic steatorrhea can sometimes be corrected by the oral administration of large amounts of calcium with the labeled vitamin B₁₂.²¹

c. The pernicious anemia of fish tapeworm infestation. This disease is infrequently seen in the United States but is of public health significance in Finland⁶⁴ and Japan. *Diphyllobothrium latum* infestations in these countries is present frequently but the incidence of megaloblastic

anemia is small even in those who are infested. This is readily corrected by ridding the patient of the worm and/or parenteral vitamin B₁₂ therapy.

II. Folic Acid Deficiency

A. Decreased intake

1. Tropical macrocytic anemia as described by Lucy Wills in India, is thought to be primarily due to dietary deficiency of folic acid. It is difficult to state with certainty that this is the only cause since these patients frequently have deficiencies of other B vitamins.

2. Nutritional macrocytic anemia as seen in the United States is usually found in eccentric, elderly people who insist on a tea and toast diet or in alcohol addicts who are starving. Folic acid daily requirements have not been firmly established but it is felt the requirement is in the order of five³⁵ to 50²⁶ micrograms; daily folic acid stores have been estimated at five to ten mg.¹⁹ In contrast to vitamin B₁₂ deficiency in vegans, which apparently takes several years to develop, nutritional deficiency of folic acid may lead to megaloblastic anemia in four to five months.²⁶

B. Decreased absorption.

1. Generalized

a. Tropical sprue. This is a malnutrition syndrome that has not been well defined. These patients have generalized malabsorption and steatorrhea. The megaloblastic anemia which they sometimes develop may be due to a vitamin B₁₂ deficiency in part but is more frequently due to folic acid deficiency. Small doses of folic acid may correct the anemia readily.⁵⁹

b. Idiopathic steatorrhea.

c. Celiac disease.

2. Specific malabsorption of folic acid has been described in one patient, a child with recurrent megaloblastic anemia.⁴³ It appears that some factor in the intestinal juice necessary for the absorption of folic acid is absent or deficient in this patient. This condition can be distinguished from megaloblastic anemia of infancy and childhood by the fact that the latter is corrected usually by one course of folic acid and does not recur whereas the former requires chronic, continuous therapy.

3. Folic Acid Antagonists

1. Aminopterin and amethopterin employed in the treatment of leukemias,³² lymphomas and choriocarcinomas occasionally result in megaloblastic erythropoiesis. This can be treated with folic acid but specific treatment is usually not necessary since these changes subside with discontinuation of antifolic therapy.

2. Daraprim, which is an anti-malarial compound that is occasionally used in malaria and toxoplasmosis, can result in folic acid deficiency if given in large enough doses over long periods of time.⁵²

3. Anticonvulsants—In recent years there have been many reports, especially in England, of megaloblastic anemias in patients with epilepsy who are taking Dilantin,² Mysoline⁹ or the barbiturates.¹⁰ Serum vitamin B₁₂ levels have been normal. Although the exact mechanism is not well understood it is felt that these drugs probably act as metabolic antagonists to folic acid or its active principles. Pharmacologic doses of folic acid have corrected the anemia.

C. Megaloblastic anemia of pregnancy is not a single homogenous disease but in most cases is due to folic acid deficiency. The mechanism of production of this deficiency is unknown. Occasionally a patient is found with vitamin B₁₂ deficiency which responds completely to vitamin B₁₂.⁴⁰ Megaloblastic anemia of pregnancy, while not common in this country, continues to be a problem in certain areas of the world. Recurrence of the megaloblastic anemia with subsequent pregnancy is the rule.

D. The megaloblastic anemia of infancy is usually due to folic acid⁶⁸ deficiency which may be partially due to dietary insufficiency. It is also felt that the requirements for folic acid during this rapid growth period may be relatively high. Vitamin B₁₂ deficiency in infancy can result in a similar picture⁴⁹ and the mechanism of production is obscure.

E. Vitamin C deficiency as a factor in the causes of megaloblastic anemia seems unlikely since folic acid deficiency usually accounts for the reported cases.⁶⁷

F. Folic acid deficiency in reticulocytopenic crises occurring in the course of certain chronic hemolytic anemias have been reported in thalassemia major,^{33, 41} sickle cell anemia⁵³ and hereditary spherocytosis.¹¹ Se-

rum vitamin B₁₂ levels have been normal. Serum "folic acid" levels have been low in the patients in which it was measured.⁴¹ Increased amounts of formiminoglutamic acid excretion after histidine load have been demonstrated.^{41, 53, 11} Pharmacologic doses of folic acid were required for hematologic response in one patient³³ but doses of 1.0 mg. daily were adequate in two patients with sickle cell anemia.⁵³

III. *Miscellaneous Rare Causes of Megaloblastic Anemias.*

A. Reports^{28, 29} are available of a single, fascinating child who developed severe anemia with hypochromic, microcytic red cells in contrast to the usual picture in megaloblastic erythropoiesis. It was found that the patient's urine contained large amounts of orotic acid crystals. This substance is a necessary precursor for the synthesis of desoxyribonucleic acid and ribonucleic acid.

B. One case of pyridoxine responsive anemia has been reported in which there were hypochromic, microcytic red cells and megaloblastic erythropoiesis.⁴⁷

C. One case of megaloblastic erythropoiesis in a patient with a chronic anemia and hemochromatosis has been reported; a good response to folic acid in pharmacologic doses was reported.²⁰

D. Occasionally in the course of untreated acute leukemia megaloblastic changes in the red cells are observed. The mechanism of this is unknown and this state is usually not correctable with either vitamin B₁₂ or folic acid. Megaloblastic erythropoiesis is the rule in the DiGuglielmo syndrome⁵ and is not due to either folic acid or vitamin B₁₂ deficiency per se. Again the mechanism of megaloblastosis in these situations is not well understood.

CONCLUSIONS

The following studies and treatment are suggested in patients with megaloblastic anemias:

1. If the severity of anemia is not prohibitive a control period for studies is indicated. Daily reticulocyte counts while the patient is maintained on a diet low in both

folic acid and vitamin B₁₂ are necessary to exclude spontaneous remissions.

2. Serum drawn in chemically clean, sterile glassware may be frozen to determine vitamin B₁₂ and "folic acid" concentrations at a later date if indicated.

3. Determination of urinary formiminoglutamic acid after histidine loading is useful in documenting folic acid deficiency.

4. Gastric analysis is helpful in excluding pernicious anemia. If presumptive achlorhydria is found on the Diagnex screening test, a tube gastric analysis with maximum histamine stimulation is indicated. Gastric biopsy using peroral tube is useful in proving mucosal atrophy as seen in pernicious anemia.

5. Upper gastrointestinal and small bowel radiography is indicated to exclude gastric carcinoma or polyps in pernicious anemia. Malabsorption (deficiency) patterns in small bowel, and anatomic lesions such as blind loops, strictures, fistulae, resections, and jejunal diverticulosis should be searched for.

6. In the cases in which gastrointestinal causes of megaloblastic anemia are indicated studies of absorption of other nutrients may be useful. Serum carotene levels are useful as a screening test for fat malabsorption. Steatorrhea may be quantitated by 24 hour stool fat measurements or I¹³¹ labeled triolein absorption studies. Carbohydrate absorption is better studied with zylose rather than glucose. Protein loss can be estimated utilizing I¹³¹ labeled polyvinylpyrrolidone (pvp) and heavy protein losses in malabsorption syndromes may be reflected in low serum albumin concentration.

7. Small bowel biopsies utilizing peroral tubes may show specific pathologic findings in idiopathic steatorrhea, Whipple's disease, and the lymphomas.

8. The Schilling test utilizing Co⁵⁶ B₁₂ in physiologic doses is useful in differentiating the various causes of vitamin B₁₂ deficiency; however, the flushing doses of vitamin B₁₂ are so large that they interfere with careful therapeutic trials. Therefore, these studies should be deferred until after treatment.

9. If the presumptive diagnosis is vitamin B₁₂ deficiency, small (one to five micrograms i.m.) daily doses of vitamin B₁₂ should be given and daily reticulocyte counts obtained. If folic acid deficiency is suspected,

small (25 to 50 micrograms i.m.) daily doses of folic acid are indicated as a therapeutic trial. □

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800 N.E. 13th Street, Oklahoma City, Oklahoma

ABSTRACTS

EXPERIMENTAL STUDIES OF ACUTE RENAL FAILURE, I The Protective Effect of Mannitol, J. Urology 89: 1, January 1963, William L. Parry, M.D., J. A. Schaefer, M.D., and C. B. Mueller, M.D.

An experimental model of acute renal failure was prepared in rats. This consisted of pre-feeding on a low sodium, acid-ash diet, dehydration for twenty-four hours, and the injection of two grams per one KG of methemoglobin pigment. The mortality rate was 93.6 per cent in this group of animals. Mannitol (0.3 Gm./Kg. in five per cent isotonic solution) was then administered intravenously at the time of methemoglobin pigment injection. This dropped the mortality rate to 1.1 per cent. The protective effect of mannitol was also demonstrated by a striking alteration in the gross and microscopic appearance of the kidneys. Other compounds which exert an equal osmotic effect within the tubule can be as effective as mannitol in protecting the experimental animal from methemoglobin injection. The effect of mannitol was markedly decreased if its administration was delayed from that of the methemoglobin pigment. A thirty minute delay dropped the survival rate to twenty-seven per cent, compared to 98.9 per cent in those animals receiving mannitol simultaneously with the methemoglobin pigment.

The crucial action of mannitol was postulated to be its effectiveness in retaining water within the tubular lumen thus preventing the precipitation of protein and the subsequent deleterious effect of distal or collecting tubule protein cast formation and nephron obstruction within a tight renal capsule.

ADDISON'S DISEASE WITH DIABETES

Bourne and Howard* have added to the literature the 81st case of a patient having both diabetes mellitus and Addison's disease. In 1947, a 35-year-old man was discovered to have diabetes mellitus, which was initially controlled with a 2100 calorie diet and 50 units of insulin daily. A few months later, hypoglycemic reactions occurred with increasing frequency. Early in 1949, the patient complained of weakness, loss of libido, and noted the appearance of pigmented spots on his skin. Laboratory studies confirmed the diagnosis of adrenal insufficiency.

Treatment with desoxycorticosterone and salt brought about considerable improvement in the patient's condition, but his tolerance of insulin remained precariously delicate. His insulin requirement dropped to ten units per day, and later to six units, and even at these small dose levels severe hypoglycemic episodes occurred.

With the advent of cortisone, his treatment with

desoxycorticosterone was terminated and the new drug was given. After the first day of treatment (25 mg. q.i.d.) his blood sugar rose to 624 mg. per cent and a psychotic episode transpired. After awhile his mental state cleared, and with much effort his metabolic economy was "balanced out" with 12.5 mg. of cortisone, 35 units of insulin, and a dash of methyl testosterone. This regimen served him well for several years. Subsequent assaults upon his health appeared in the form of two attacks of acute appendicitis (which the surgical consultant wisely elected to treat with antibiotics rather than by extirpation) and a myocardial infarction. However, at the time of reporting, the patient was recovering from his heart attack and his metabolic machinery had been tuned up once more.

REVIEWER'S NOTE: A situation in which a patient having a disease causing hyperglycemia then acquires another causing great sensitivity to insulin makes good material for a medical nightmare. Add to this the several other frailties attendant upon adrenal insufficiency, and the prospects for a cold sweat become truly ominous. With the improved treatment of Addison's disease now available, more of these patients will live longer (and presumably therefore more of them will develop diabetes), and more physicians will have to go tightrope-walking with them. □

*Addison's Disease Complicating Diabetes. F. Munroe Bourne and R. Palmer Howard. Canadian Medical Association Journal 88: 365-368 (February 16) 1963.

RECENT PUBLICATIONS FROM THE MEDICAL CENTER

Inhibition of Ascorbic Acid Synthesis in vitro by Fractions of Liver Phospholipids. P. B. McCay. Federation Proceedings 22: 592, 1963.

Purification and Properties of a Zymogen from Human Gastric Mucosa. J. Tang and K. I. Tang. Journal of Biological Chemistry 238: 606, 1963.

Degradation of Serum Glycoproteins by Enzymes from *Diplococcus Pneumoniae*. Y. Li and M. R. Shetlar. Federation Proceedings 22: 537, 1963.

The Comparative Enzymology and Cell Origin of Rat Hepatomas. III. Some Enzymes of Amino Acid Metabolism. H. C. Pitot, C. Peraino, R. H. Bottomley, and H. P. Morris. Cancer Research 23: 135, 1963.

Studies on *Calvatia Gigantea*. III. Antitumor Substances Produced by Mycelium from Germinated Spores and Parent Basidiocarps. G. S. Bulmer, E. S. Beneke, and J. A. Stevens. Mycologia 54: 621, 1962.

Reprints of the above publications are usually available on request from the senior author, c/o Mrs. Joan Campbell, Veterans Administration Hospital, 921 N.E. 13th Street, Oklahoma City, Oklahoma.

Ballistocardiography?

THOMAS N. LYNN, JR., M.D.*

BALLISTOCARDIOGRAPHY is the study of motion of the body caused by the ejection of blood from the heart. One expression of this motion with which most are familiar is the tiny jiggle of the needle of a spring scale synchronous with the heart beat. It is this motion that is sensed, amplified and recorded. This can be done in a head-foot, left-right, anterior-posterior or rotatory parameter and the motion may be recorded as displacement, velocity, or acceleration. In the head-foot direction, a recording from a normal individual looks not too dissimilar from an electrocardiographic complex taken at a high paper speed. These wave forms change as a person develops an abnormal heart resulting in abnormal ejection dynamics, such that these complexes become lower in amplitude, splintered and ill defined. Stroke volume may be estimated from some recordings.

In order for a diagnostic test to become a permanent part of the medical armamentarium, it should, (1) be of little inconvenience to the patient relative to the amount of information gained, (2) be easily administered, (3) be relatively inexpensive, and (4) yield reproducible information which the physician can interpret in relationship to the patient's illness.

Ballistocardiography is easily done and takes only a short period of time. A technician can be trained to do the test. After the initial investment of obtaining a satisfactory recording device, the test need be no more expensive to the patient than a standard electrocardiogram. It is in the area of

the fourth qualification that the jury is still out concerning ballistocardiography.

A ballistocardiogram can yield interesting and informative material about the heart. Its wave forms, however are modified by a number of different factors, such as stroke volume, the mechanics of cardiac ejection, the quality or stiffness of the vessels into which the blood is being ejected, the quality of the suspension of the great vessels and the heart in the thorax, probably the tone of the postural musculature of the body, the cushion of fat which is interposed between the skeleton and the table and finally the various mechanical and electronic intricacies of the sensing and recording device itself.

That useful information can be obtained from ballistocardiography in certain patients is clear. The chief problem remaining is that of dissecting out the influences of the previously mentioned factors. In other words, when an abnormal wave form appears one is confronted by a series of questions is this the result of heart disease influencing the ejection dynamics?, or is this the result of vessels stiff from atherosclerosis?, or merely that the individual is fat?

At some time this differentiation will be possible and at that time the ballistocardiograph can afford the medical profession a wealth of easily obtained information concerning the heart and its dynamics. □

* * *

If you are not receiving *Modern Concepts of Cardiovascular Disease* and wish to receive it, notify the Oklahoma State Heart Association, 825 N.E. 13th Street, Oklahoma City 4, Oklahoma.

*Assistant Professor, Department of Preventive Medicine and Public Health, Instructor, Department of Medicine, University of Oklahoma School of Medicine, 800 N.E. 13th Street, Oklahoma City 4, Oklahoma.

Dean's Message

A generous response of faculty members and departments to a disturbing "state of the library" report last year has made it possible to resume purchases of new books and renew other curtailed library activities.

While the basic problem of financing operations of the Medical Center Library remains unsolved, the Library Committee has asked us to review recent encouraging developments in library operations and to express appreciation to those who have shown genuine concern and assisted with emergency aid.

The Library Enrichment Fund, set up to receive both departmental and individual gifts, has reached a total of \$3,700. The library has been able to add 1,800 volumes and 13 new journal subscriptions since July 1. Seventeen memorial books also have been purchased. In addition, the School of Nursing Library and sizeable holdings of the Department of Psychiatry and the Speech and Hearing Center libraries have been contributed to the main library.

Our new head librarian, Mr. Leonard Eddy, has effected several innovations to improve service. The library is open additional hours per week. The checkout times

on bound journals and books has been extended to two weeks. Selected checklists of possible acquisitions are being distributed to all departments and circulation of the new book list has been reactivated. A fast Xerox copying machine was installed in the spring and this copying service is available at a nominal fee to all library patrons.

Our library is not alone in its financial plight. Scott Adams, deputy director of the National Library of Medicine reports: "The medical library network, which has been designed to make the published record of medicine available, is in dire trouble. During a period of intensive development of research institutions, medical schools, and other medical facilities, their essential library support has been seriously neglected." The major granting agencies as yet have no mechanism for helping libraries grow in step with the local research and training programs they support.

Action taken by our faculty to alleviate the problem is not to be judged solely in terms of the amounts of money provided. Truly the most heartening factor was the demonstration of an understanding of the predicament and a willingness to help. □

Mark R. Everett

AMA LAUNCHES "OPERATION HOMETOWN"

It's "Medicare" season again, and the American Medical Association has inaugurated "Operation Hometown," a grass roots campaign against H.R. 3920, the 1963-64 version of the social security health care bill.

Although authoritative predictions are tagging 1964 as the critical year for the Administration's socialized medicine scheme, AMA officials are not overlooking the possibility of action on the measure this Summer. It is reported that the House Ways and Means Committee will hold public hearings on the bill in mid-July and it is entirely possible that organized medicine and its allies will face a severe test within the next few weeks.

Fearful that the recent decline in presidential pressure for H.R. 3920 has lulled physicians into a state of apathy, AMA President-Elect Edward R. Annis, M.D. cautioned a group of 2,000 persons in Oklahoma City on April 23rd: "When do you worry about what your children are doing? When you can hear them making noise in the next room, or when they are very, very quiet?"

The Plan

"Operation Hometown" represents the AMA's best effort to date to develop a comprehensive grass roots reaction to "Medicare." Basically, it is a six-pronged program designed for implementation at the county medical society level. In addition to a county chairman's packet of instructions and materials, the "Operation Hometown" kit contains folders and materials for subcommittee chairmen on the following activities: *Speakers Bureau, Enlisting Allies, Newspaper, Radio and TV Relations, Letter Writing Campaign, Materials Distribution, and Congressional Contact Program.*

The quality of the "Operation Hometown" kit leaves nothing to be desired, and its implementation at the county society level will require very little time from any individual if organized properly and if the duties are delegated as indicated in the instructions.

"Operation Hometown" is ready to go—to be implemented *immediately* in every county medical society of the Oklahoma State Medical Association and planned to gain momentum as the pressure of a presidential election year predictably whips the issue into a situation of national emergency.

In Oklahoma

In anticipation of the next bout with "Medicare," the OSMA Council on Public Policy contacted county medical society officers in January to request the appointment of **Legislative Action** committees for the purpose of implementing such a program as "Operation Hometown." Out of the 45 county societies of the OSMA, 26 appointed the committees as requested while 19 failed to respond.

"Operation Hometown" kits were mailed on May 6th to the designated chairman of county society Legislative Action committees and to the presidents of county medical societies which declined to appoint such committees. So, the program is now in the hands of a responsible physician in every county society of the state, and the success of the program in Oklahoma will depend upon the response of the component societies.

In addition to the "Medicare" materials available through the American Medical Association, the OSMA Council on Public Policy will begin production of more localized materials this Summer and Fall. An in-

creased public relations budget for the state society will enable the Council to develop a radio, television and newspaper campaign against "Medicare," and present plans call for unleashing such a mass communications drive during the week preceding any vote to be taken on H.R. 3920 by the House of Representatives or Senate.

Members of the Council on Public Policy and OSMA staff personnel will barnstorm key congressional districts of the state in July, in an attempt to muster large-scale implementation of "Operation Hometown" in the congressional areas which are most critical.

Council Chairman Rex E. Kenyon, M.D., says the most important problem of the moment is "to develop responsive organizations in the county medical societies.

"When this important step is accomplished, we can stimulate a reaction against H.R. 3920 which will build to a crescendo right before the final showdown on H.R. 3920. The enthusiastic use of the "Operation Hometown" program will produce massive opposition to the legislative proposal, and I'm sure our representatives will respond to the will of their respective electorates." □

Pamphlet Rack Available

The AMA has announced the availability of a new pamphlet rack, with a program of new health education pamphlets.

The rack and original set of 200 pamphlets is available at a total cost of \$8.95. Orders should be sent directly to the AMA Order Department, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois. □

DUER NAMES COUNCILS, COMMITTEES

The president of the Oklahoma State Medical Association, Joe L. Duer, M.D., Woodward, has announced tentative appointments to the various Councils and Committees of the association.

Under the organizational structure outline in the OSMA bylaws, the association activities are administered by Standing Committees, Councils and Special Committees. The responsibilities of Standing Committees are outlined in the bylaws, while Councils and Special Committees are given special assignments in accordance with the mandates of the House of Delegates and Board of Trustees. In addition, the Councils and Committees are largely responsible for implement-

ing the program of the president.

Doctor Duer's initial appointments represent an effort to simplify the committee structure. However, chairmen of councils may request the appointment of additional committees and members as the situation warrants.

Council chairmen will be asked to hold organizational meetings as soon as possible, at which time the program assignments will be outlined and the possible appointment of additional committees will be discussed.

The following individuals have been asked to serve in the stated capacities:

Standing Committees

EXECUTIVE

Joe L. Duer, M.D., Woodward, Chairman
J. Hoyle Carlock, M.D., Ardmore
Wilkie D. Hoover, M.D., Tulsa
Malcom E. Phelps, M.D., El Reno
Harlan Thomas, M.D., Tulsa
R. R. Hannas, M.D., Sentinel
Mark R. Johnson, M.D., Oklahoma City
Marshall O. Hart, M.D., Tulsa

CONSTITUTION AND BYLAWS

J. R. Stacy, M.D., Oklahoma City, Chairman
C. M. Hodgson, M.D., Kingfisher
Yale E. Parkhurst, M.D., Oklahoma City
Thomas C. Points, M.D., Oklahoma City
Earl M. Lusk, M.D., Tulsa

CREDENTIALS

C. Riley Strong, M.D., El Reno, Chairman
R. G. Obermiller, M.D., Woodward
Samuel R. Turner, M.D., Tulsa

GRIEVANCE

E. C. Mohler, M.D., Ponca City, Chairman
A. T. Baker, M.D., Durant
Walter E. Brown, M.D., Tulsa
Clinton Gallaher, M.D., Shawnee
J. Hoyle Carlock, M.D., Ardmore

ANNUAL MEETING AND SCIENTIFIC WORKS

R. R. Hannas, M.D., Sentinel, Chairman
Joe L. Duer, M.D., Woodward
Harlan Thomas, M.D., Tulsa
Mark R. Johnson, M.D., Oklahoma City
Vernon Cushing, M.D., Oklahoma City
Irwin H. Brown, M.D., Oklahoma City
C. S. Lewis, M.D., Tulsa
Arthur E. Schmidt, M.D., Oklahoma City
William T. Holland, M.D., Tulsa
R. D. Anspaugh, M.D., Oklahoma City
Robert P. Holt, M.D., Oklahoma City
A. M. Shideler, M.D., Enid
C. Thomas Thompson, M.D., Tulsa

Councils And Special Committees

COUNCIL ON PUBLIC POLICY

Rex E. Kenyon, M.D., Oklahoma City, Chairman
R. Q. Goodwin, M.D., Oklahoma City
Thomas C. Points, M.D., Oklahoma City
Vernon D. Cushing, M.D., Oklahoma City
John E. McDonald, M.D., Tulsa
Worth M. Gross, M.D., Tulsa

E. K. Norfleet, M.D., Bristow
David Carson, M.D., Fairland
Ed A. Brashear, M.D., Barnsdall
E. H. Shuller, M.D., McAlester
Paul B. Lingenfelter, M.D., Clinton
Mark D. Holcomb, M.D., Enid
M. H. Newman, M.D., Shattuck
Louis H. Ritzhaupt, M.D., Guthrie

COUNCIL ON INSURANCE

Dave B. Lhevine, M.D., Tulsa, Chairman
E. C. Mohler, M.D., Ponca City
Marshall O. Hart, M.D., Tulsa
C. Alton Brown, M.D., Oklahoma City
Nolen L. Armstrong, M.D., Oklahoma City
William R. Cheatwood, M.D., Duncan
Wylie G. Chesnut, M.D., Miami
Richard E. McDowell, M.D., Tulsa
C. E. Woodard, M.D., Drumright

COUNCIL ON PROFESSIONAL EDUCATION

R. R. Hannas, M.D., Sentinel, Chairman
Irwin H. Brown, M.D., Oklahoma City
E. E. Shircliff, M.D., Oklahoma City
Orange M. Welborn, M.D., Ada
Roger Reid, M.D., Ardmore
Wendell L. Smith, M.D., Tulsa
S. N. Stone, Jr., M.D., Oklahoma City
Cleve Beller, M.D., Okmulgee
H. E. Denyer, M.D., Bartlesville
B. C. Chatham, M.D., Chickasha
Donald L. Brawner, M.D., Tulsa
John R. Taylor, M.D., Kingfisher

Financial Aid to Education

J. Hoyle Carlock, M.D., Ardmore, Chairman
Joe L. Duer, M.D., Woodward
Harlan Thomas, M.D., Tulsa
Clinton Gallaher, M.D., Shawnee
Walter E. Brown, M.D., Tulsa

COUNCIL ON SOCIO-ECONOMIC ACTIVITIES

E. M. Gullatt, M.D., Ada, Chairman
Stanley R. McCampbell, M.D., Oklahoma City
George H. Garrison, M.D., Oklahoma City
E. H. Shuller, M.D., McAlester
B. C. Chatham, M.D., Chickasha
Wilkie D. Hoover, M.D., Tulsa
Kenneth L. Wright, M.D., Ardmore
John E. Highland, M.D., Miami
Kieffer D. Davis, M.D., Bartlesville
C. Riley Strong, M.D., El Reno
A. K. Kent, M.D., Muskogee
Edwin A. McGrew, M.D., Norman

Public Welfare

E. M. Gullatt, M.D., Ada, Chairman
Stanley R. McCampbell, M.D., Oklahoma City
George H. Garrison, M.D., Oklahoma City
E. H. Shuller, M.D., McAlester
B. C. Chatham, M.D., Chickasha

Medical-Legal Relations

Marshall O. Hart, M.D., Tulsa, Chairman
William N. Harsha, M.D., Oklahoma City
C. Cody Ray, M.D., Pawhuska
Robert O. Ryan, M.D., Norman
Carlton E. Smith, M.D., Henryetta

COUNCIL ON PUBLIC HEALTH

Hayden H. Donahue, M.D., Norman, Chairman
Gifford H. Henry, M.D., Tulsa
Don H. O'Donoghue, M.D., Oklahoma City
George H. Guthrey, M.D., Oklahoma City
John W. Records, M.D., Oklahoma City
J. Walker Morledge, M.D., Oklahoma City
William H. Reiff, M.D., Oklahoma City
Kirk T. Mosley, M.D., Oklahoma City
Robert L. Loftin, M.D., Broken Bow
John X. Blender, M.D., Cherokee
Avery B. Wight, M.D., Enid
John W. Shackelford, M.D., Oklahoma City
Joe M. Parker, M.D., Oklahoma City
Ella Mary George, M.D., Oklahoma City
Nolen L. Armstrong, M.D., Oklahoma City
Francis A. Davis, M.D., Shawnee

Perinatal Problems

John W. Records, M.D., Oklahoma City, Chairman
John W. Shackelford, M.D., Oklahoma City
Jacob Kay, M.D., Oklahoma City
George H. Garrison, M.D., Oklahoma City
Matthew B. Moore, M.D., Tulsa
Elmer Ridgeway, Jr., M.D., Oklahoma City
Hall Ketchum, M.D., Tulsa
William R. McShane, M.D., Tulsa
Thomas C. Points, M.D., Oklahoma City
James O. Merrill, M.D., Oklahoma City
Warren R. Crosby, M.D., Oklahoma City
Billy R. Goetzinger, M.D., Oklahoma City
William E. Jaques, M.D., Oklahoma City

Proceedings of the 57th Annual Session of the House of Delegates of the Oklahoma State Medical Association

OPENING SESSION

The 57th Annual Session of the House of Delegates of the Oklahoma State Medical Association was called to order at 10:15 a.m., by Marshall O. Hart, M.D., Speaker of the House of Delegates, on Friday, May 3, 1963, in the Pompeian Court of the Mayo Hotel, Tulsa, Oklahoma.

The Credentials Committee Chairman, C. Riley Strong, M.D., declared a quorum present.

Invocation was given by Doctor Roger Reid of Ardmore.

The Speaker announced the appointment of the following working committees of the House of Delegates:

Credentials Committee

C. Riley Strong, M.D., Chairman
Michael Burleson, M.D.
Ben F. Gorrell, M.D.
James W. Kelley, M.D.

Constitution and Bylaws Committee

E. K. Norfleet, M.D., Chairman
Fred Sellers, M.D.
Leon D. Combs, M.D.

Miscellaneous Business Committee

R. Q. Goodwin, M.D., Chairman
Lillian Robinson, M.D.
Craig S. Jones, M.D.
Carlton E. Smith, M.D.
Vernon D. Cushing, M.D.

Legislation and Public Policy Committee

Rex E. Kenyon, M.D., Chairman
C. H. Cooke, M.D.
Worth M. Gross, M.D.
Floyd T. Bartheld, M.D.
Louis H. Ritzhaupt, M.D.
Roger Reid, M.D.
Homer D. Hardy, M.D.

Insurance and Medical Service Committee

Harlan Thomas, M.D., Chairman
Ollie McBride, M.D.
W. A. Matthey, M.D.
James Petty, M.D.
Samuel R. Turner, M.D.

Robert G. White, M.D.
Cecil R. Stansberry, M.D.

Resolutions Committee

Wilkie D. Hoover, M.D., Chairman
Rex E. Kenyon, M.D.
Harlan Thomas, M.D.
Francis A. Davis, M.D.
Malcom E. Phelps, M.D.
E. K. Norfleet, M.D.
R. Q. Goodwin, M.D.
J. Hoyle Carlock, M.D.
Thomas C. Points, M.D.

Sergeants at Arms

Mark D. Holcomb, M.D., Chairman
Edwin Fair, M.D.
H. D. Wolfe, M.D.
L. A. Munding, M.D.
L. A. S. Johnston, M.D.

Tellers

Earl M. Lusk, M.D., Chairman
Elvin Amen, M.D.
E. L. Buford, M.D.
John Jennings, M.D., (Absent)

Parliamentarian

C. M. Hodgson, M.D.

As the next order of business, the following persons were introduced and brought greetings to the House of Delegates:

Mrs. Milton L. Berg, President of the Woman's Auxiliary to the Oklahoma State Medical Association.

Mrs. Tom C. Sparks, Incoming President of the Woman's Auxiliary.

Mrs. C. Rodney Stoltz, President-Elect, AMA Woman's Auxiliary.

S. N. Stone, M.D., Associate Dean of the University of Oklahoma School of Medicine. President J. Hoyle Carlock, M.D., presented Doctor Stone with a check from the American Medical Association Education and Research Foundation in the amount of \$11,361.43.

Kirk T. Mosley, M.D., Commissioner of Health; and John A. Lung, Vice-President, O.U. Chapter, Student AMA.

The Speaker announced that the 58th Annual Meeting of the Oklahoma

State Medical Association would be held in Oklahoma City, May 1, 2, and 3, 1964, and asked the pleasure of the House of Delegates with regard to the reading of the minutes of the last annual meeting.

E. K. Norfleet, M.D., moved that the House of Delegates dispense with the reading of the minutes and that they be adopted as published in the OSMA Journal. Yale E. Parkhurst, M.D., seconded the motion and it carried.

The Speaker welcomed all members and guests to the 57th Annual assembly and stressed the need for all delegates, alternates, and members of the OSMA to attend the reference committee meetings. (A copy of his remarks are attached and made a part of the minutes—see page 282.)

It was announced by the Speaker that the House of Delegates would recess for lunch at approximately 12:30 p.m., in order that those wishing to attend the Americanism Forum luncheon could do so, and would reconvene at 2:00 p.m.

NOMINATION OF OFFICERS

The next order of business on the agenda was the nomination of officers. The Speaker declared the House of Delegates open for nominations for the office of President (one year term of office).

J. L. Duer, M.D., Woodward, was nominated by R. G. Obermiller, M.D., Woodward.

J. R. Stacy, M.D., Oklahoma City, was nominated by C. B. Dawson, M.D., Oklahoma City.

R. R. Hannas, M.D., moved to case nominations, the motion was seconded and carried.

The Speaker told the House that a question had been raised regarding the intent of Chapter V, Section 5, of the OSMA Bylaws, which reads:

“Nominations shall be made in

(Continued on Page 276)

Welfare Department Cuts Physicians' Fees

Brushing aside the objections and alternate proposals of OSMA representatives, the Department of Public Welfare announced a June 1st cut-back in medical, hospital and nursing home payments to be paid under the health care program it operates for the aged, blind and disabled.

Surgical fees will be cut 15 per cent across-the-board and the pay period for in-patient medical cases will be cut from the present period of fifteen days to ten days. General hospitals will have their pay period reduced from 21 days to 14, and nursing homes will take ten per cent less in per diem payments.

Welfare recipients, however, have been assured they will suffer no loss in health care benefits. The medical and osteopathic professions seem to have emerged as the principal scapegoats for the financial dilemma of the government agency. Welfare department spokesmen have been careful not to criticize the actions of the Oklahoma Legislature which drained off \$11.5 million in sales tax funds to finance institutions for the mentally retarded and another \$10.5 million to give welfare recipients an increase in their monthly subsistence checks.

Instead, the department and the other vendors of health services pinpoint the problem as being one of over-utilization, and physicians are being held almost totally responsible for the admission rate, length of stay and cost of the program.

The "economy" action taken by the government agency was supported by the Oklahoma State Hospital Association and the Oklahoma State Nursing Home Association as being necessary until "utilization of this program is brought within the available moneys." The Oklahoma State Medical Association objected to the course of action taken while the Oklahoma Osteopathic Association remained silent.

Since the inception of the program in 1957, physicians' fees have remained basically unchanged (25 per cent less than average charges). At

the same time, the hospital and nursing home associations have promoted and achieved higher per diem payments as well as expanded pay periods.

OSMA Stand

The OSMA Public Welfare Committee has been wrestling with the allegation of over-utilization for nearly a year, but was frustrated in its attempts to obtain specific information as to areas of the state where physician-abuse of the program is supposed to be taking place. A letter from the committee asking for specific charges to be made was not answered, and a utilization study made by the OSMA group was dismissed as being inaccurate.

Finally, the Department of Public Welfare agreed to reveal the information in its files if the medical association committee would serve as a panel of consultants to the department and attempt to correct any abuses.

The committee sought and obtained this authority from the House of Delegates on May 3rd, stating "... that the profession has a responsibility to govern the activities of members whose actions may reflect discredit upon the profession as a whole. At the same time, the committee has a responsibility to protect physicians against false accusations; and can only do so if thorough investigations of complaints are made." Despite acknowledgment that there are probably some areas where physicians misunderstand or misapply the regulations, most medical association leaders feel that the basic problem with the health care program lies in its design, and that a more business-like system of operation would minimize the incidence of inadvertent "abuse." Specifically, the OSMA Public Welfare Committee favors converting the welfare health care program to the principle of a prepayment plan, where the Department of Public Welfare would simply pay the premium for its beneficiaries under a comparable plan written by Blue Cross-Blue Shield or another competent insurance organization.

It was the feeling of the commit-

tee—and was later supported by the House of Delegates—that such an arrangement would take physicians' fees out of the political arena, would save tax funds, and would preserve the dignity of indigent Oklahomans by providing them with individual policies clearly setting forth the benefits to which they are entitled.

The OSMA plan for economy and increased efficiency was presented to the Department of Public Welfare on May 9th but was not given favorable consideration. In addition, the committee proposed a more explicit policy for admission to the hospital under the program, but this was not found to be acceptable.

Present plans of the Oklahoma State Medical Association call for a continued effort to cooperate with the Department of Public Welfare in controlling utilization of the program and for intensified efforts to convert the program to health insurance. □

Residents in Child Psychiatry Named

The first residency program in child psychiatry to be initiated in Oklahoma will begin July 1 at Children's Medical Center in Tulsa, according to John L. Byrne, administrator of the hospital.

Named as the first two trainees are Louis Glatch, M.D., currently in training at Medford State Hospital in Harding, Massachusetts, and Duncan McMasters, M.D., now at the University of Oklahoma School of Medicine.

The new program, under the direction of James T. Proctor, M.D., Medical and Training Director of the center, will allow the trainees to have clinical experience with both inpatients and outpatients. A close liaison will be maintained with community agencies such as the schools, juvenile court, Tulsa Boys' Home, St. John's Vianney and other facilities.

Mr. Byrne announced that a portion of the training will be supported by a recent grant from the training division of the National Institute of Health of the Department of Health, Education and Welfare. □

New Professional Liability Program, Increased Rates

Many Oklahoma physicians will be paying more for their professional liability insurance protection the next time their premiums come due. The changes in the association-approved program of the St. Paul Fire and Marine Insurance Company were brought about by a national re-classification of physicians as insurance risks and by disappointing claims experience in Oklahoma for the past three years.

Nearly a year ago the insurance company requested a 26 per cent rate increase on the Oklahoma plan, saying that a loss ratio of 76.7 per cent for the years 1959 through 1961 had made their operation unprofitable in the state (51 per cent is considered break-even). Through a series of three meetings with the company, the association's Professional Liability Insurance Committee attempted to delay any rate adjustment, arguing that a favorable 1962 loss ratio reflected a favorable trend in the program. The committee was partially successful in that a compromise was agreed upon and later approved by the OSMA Board of Trustees.

Here are the highlights of the agreement:

- A 20 per cent rate increase was approved (a savings of over \$20,000 as compared to the company's proposal).
- The policy of uprating an individual county was rescinded.
- The company promised an accelerated claims prevention program in an effort to improve claims experience and decrease rates.
- Better communications were established between the OSMA and the company regarding surveillance of the financial course of the program.

Re-classification of Doctors

Shortly after Trustees' approval of the rate adjustment, the National

Bureau of Casualty Underwriters announced a new system of rating physicians as insurance risks.

Where St. Paul had been using two classifications to set liability rates—physicians and surgeons—the new nationwide plan called for four classes, as follows:

- *Physicians*—no surgery (other than incision of boils, suturing of skin, etc.) or obstetrical procedures.

- *Physicians*—minor surgery or obstetrical procedures not constituting major surgery.

- *Surgeons*—engaged in major surgery, including proctologists, anesthesiologists and ophthalmologists.

- *Surgeon-Specialists*—cardiac surgeons, urologists, neurosurgeons, obstetricians, gynecologists, orthopedists, otolaryngologists, plastic surgeons, general surgeons, thoracic and vascular surgeons.

Since the National Bureau's ruling was based upon actuarial costs of insuring the four classifications of physicians, and since most liability insurance companies will automatically adopt the new system, St. Paul requested association approval of the new rating system in combination with the 20 per cent rate increase.

The OSMA committee referred the matter to the House of Delegates on May 3rd, and it was approved.

Under the new plan, effective June 1, 1963, physicians doing minor surgery and surgeon-specialists will pay higher rates, while the other categories of physicians and surgeons will fare better than under the previous program.

The St. Paul program, presently protecting nearly 1,500 OSMA members, will still be priced below other major companies subscribing to the National Bureau's rating system, and St. Paul is noted for its broad form of coverage and its specialized legal defense counsel. □

OSMA Group Visits Congressional Delegation

On June 13th, twenty-two representatives of the Oklahoma State Medical Association called upon Oklahoma Senators and Representatives

in Washington, D.C., to urge the defeat of H.R. 3920, the controversial social security health care bill.

The medical group stopped in Washington while enroute to the annual meeting of the American Medical Association in Atlantic City, scheduled individual office appointments with the lawmakers, then hosted a joint luncheon in the Capitol building.

A so-called "Congressional Contact Tour," the operation is scheduled to be repeated annually as directed by the OSMA House of Delegates. Physician participants pay their own travel expenses and the OSMA is responsible for any entertainment or luncheon expense.

Making the first "official" junket were: Doctor and Mrs. Joe L. Duer, Woodward; Doctor and Mrs. Harlan Thomas, Tulsa; Doctor and Mrs. Samuel R. Turner, Tulsa; Doctor and Mrs. James H. Neal, Jr., Tulsa; Doctor John E. McDonald, Tulsa; Doctor and Mrs. David Carson, Fairland; Doctor and Mrs. E. L. Leonard, Wagoner; Doctor J. Hoyle Carlock, Ardmore; Doctor Edward K. Norfleet, Bristow; Doctor and Mrs. Francis A. Davis, Shawnee; Doctor Malcom E. Phelps, El Reno; Doctor Paul B. Lingenfelter, Clinton; Mr. and Mrs. Don Blair, Oklahoma City; and Mr. Jack Spears, Tulsa. □

DEATHS

CHARLES F. WALKER, M.D.

1875-1963

A pioneer Grove physician, Charles F. Walker, M.D., died in Miami, Oklahoma, May 4, 1963.

A native of Berryville, Arkansas, the 87-year-old physician had graduated from the St. Louis University School of Medicine in 1902. Later the same year, his long medical service began with the establishment of his practice in Grove. Few, if any, Oklahoma physicians have matched the 62 years of continuous practice in one community that Doctor Walker experienced.

In 1951, the Oklahoma State Medical Association presented Doctor Walker with a Fifty-Year-Pin commemorating a half-century of medical service. □

Oklahoma's Newest Home for the Retired

HEARTHSTONE

RETIREMENT HOME OF STILLWATER



OPENING JUNE 15

As we approach our opening date of June 15, we cordially invite your professional inspection of Hearthstone—designed for the exclusive care of the retired citizen. Situated on a 12-acre tract overlooking the city of Stillwater and Oklahoma State University, Hearthstone was designed with all the features conducive to comfortable living. Under professional management, this modern retirement home can be depended upon for diligent care of its residents and the respect of the medical profession. Applications now being accepted subject to personal interview prior to admission.

- ★ Hospital and medical facilities available.
- ★ 35 cheerful private and semi-private rooms.
- ★ Year 'round air conditioning with controls in each room.
- ★ Transportation available to High School and College Sports Events, Allied Art Series, Finest Library in Southwest, Churches, Lodges, Shopping Centers and many other local events.
- ★ Rehabilitation and recreational facilities.
- ★ Professional barber and beauty shop services.
- ★ Safety engineered and fireproof construction.
- ★ Spacious dining room, lounge and patio.
- ★ 24 hour Registered Nursing service available.
- ★ Special diets.

For full information write or call D. J. Cooper

P.O. Box 591, Stillwater, Oklahoma—Phone FR 2-2884 or FR 2-3688

THE POWER TO TAX

(Continued from Page 240)

about the whole business, recalling that in their Manifesto Marx and Engels had badly called for "a heavy progressive or graduated income tax" as a means of "making despotic inroads on the rights of property, and on the conditions of bourgeois production." And you recall how some sage and prophetic members of the Congress in 1913 predicted that the seven per cent top rate could reach the "confiscatory" level of 15 per cent, and how one congressman predicted the income tax would "make liars of us all."

But now you're older, mellower, a respected and responsible member of the community. Sure, the progressive income tax was a booby trap, but that doesn't mean we have to fall into it, that we can't tame it, refine away its bad points, keep it from getting out of hand. After all, we're grown up, this is a democracy, this is 1963, we're reasonable men, and tax reform and tax cuts are very much in the wind.

Resist the Beginnings

Still—and your brow furrows again—the income tax has indeed gotten out of hand. We've fallen into our own booby trap, from the top rate of seven per cent in 1913 we voted in a top rate of 24 per cent in 1929. With the social turbulence of the 1930's came a top rate of 79 per cent. We hurdled the 90 per cent mark in World War II and somehow we've stayed at this confiscatory mark and at a broad range of "progressive," i.e., outlandish, rates ever since, in war and peace, in prosperity and recession, under all administrations, whether Republican or Democratic. Is there no end?

A wise Scottish economist, John Ramsay McCulloch, wrote in 1845 a remarkable bit of economic logic:

"The moment you abandon . . . the cardinal principle of exacting from all individuals the same proportion of their income or

their property, you are at sea without rudder or compass, and there is no amount of injustice or folly you may not commit . . . In such matters the maxim of obsta principiis (resist the beginnings) should be firmly adhered to by every prudent and honest statesman. Graduation is not an evil to be paltered with. Adopt it and you will effectually paralyze industry and check accumulation, at the same time that every man who has any property will hasten, by carrying it out of the country, to protect it from confiscation. The savages described by Montesquieu, who to get at the fruit cut down the tree, are about as good financiers as the advocates of this sort of taxes."

Certainly the history of the income tax in America has borne out the fears of McCulloch. How the tax structure has grown! Like Topsy, in this way and that! With shelves and shelves of laws, regulations, tax court decisions, and IRS rulings by the thousands and maybe by the tens of thousands—so many in fact that no one man knows them all, bringing into being a whole new profession of tax accountants and tax attorneys.

Contrast this makeshift, complex, and virtually incomprehensible result with the simplicity of proportionality—seen, for example, in the Judaeo-Christian practice of tithing, with the tithe at ten per cent, varying proportionately with a man's income and with good times and bad. And so you find yourself agreeing with the President that the present tax system is the "largest single barrier to the full employment of our manpower and resources and to a higher rate of economic growth." You recall that in his TV address last August he said that our tax rates "are so high as to weaken the very essence of the progress of a free society—the incentive of additional returns for additional effort."

Maybe the late economist, Sumner Slichter of Harvard University, put it more pungently when he said: "The tax history of the United States in recent years has been fairly sen-

sational. A visitor from Mars would suspect that a communist fifth columnist was writing the laws for the purpose of making private enterprise unworkable."

So you muse, one taxpayer among millions. Like virtually all your fellow Americans, you want to pay your share for the cost of government, for good government; but while taxes may be as certain as death, and almost as unpleasant, you quietly question the use of taxes as a social tool for the redistribution of wealth. You remember Chief Justice John Marshall's famous dictum that the power to destroy . . . —William H. Peterson

—Reprinted by permission from the Freeman, Foundation for Economic Education, May 1963.

Social Security Due Hike?

Wilbur Mills, Chairman of the House Ways and Means Committee, has introduced a bill which proposes to raise the taxable Social Security wage base from the present \$4,800 to a new \$5,400 . . . If the bill becomes a law, beginning January 1, 1964, workers earning \$5,400 or more per year, and their employers, would each contribute an additional \$21.75 as social security taxes making the total security tax \$195.75 each, employer and employee . . . The self-employed earning \$5,400 or more would pay an additional \$32.40 raising their total tax from the present \$259.20 to a new high of \$291.60 . . . The bill, H. R. 6688, has other provisions—including an increase in maximum monthly benefits from \$127 to \$137, a provision which will continue child benefits so long as he remains a student, and a provision which would transfer to the disability trust fund one-tenth of one per cent of the increased revenue realized from the change in wage base.

It is understood that this is Mr. Mills' own bill and does not have Administration support . . . Speculation has already begun on how this type of a proposal may effect the pending King-Anderson bill.

BOOK REVIEW

EVOLUTION OF THE FUNCTION OF THE CEREBELLUM AND CEREBRAL HEMISPHERES, A. I. Karamyan.

Translated from the Russian by M. Roublev. Published for the National Science Foundation and the Department of Health, Education, and Welfare. Jerusalem, Israel Program for Scientific Translations, 1962, pp. 161. Available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., \$1.75.

Thanks to the National Science Foundation and their attempts to

translate Russian biology into English, the typical American actively engaged in medical sciences can learn of the advances made by his Russian brothers. Apparently, the Russian government need make no similar concession to Russian scientists since most of them are able to read English.

This monograph is concerned with the review of the comparative physiology of cerebellum and cerebral cortex. Although the majority of the references are to Russian work, there are a few references to clinical and experimental work from the English speaking countries. This points to

an evolution in Russian physiology which shows the accession of western electrophysiological techniques and suggests a union with the more classical Russian neurophysiology which has been basically Pavlovian.

This book is suggested for those interested in comparative physiology of the central nervous system and is valuable for the extensive review of the Russian literature related to this field of interest. The National Science Foundation and the Department of Health, Education and Welfare have performed a valuable service in making this and similar monographs available.—C. G. Gunn, M.D. □

Miscellaneous Advertisements

WANTED general practitioner or internist for group practice opportunity in expanding community. Write Administrator, The Chickasha Clinic, Box 1069, Chickasha for complete details. Inquiries kept confidential.

FOR SALE: Westinghouse, 500 M A, 150 KV Diagnostic machine. Complete with tables, transformer, control stand, new motor-driven Capri table, six inch amplifier, Nassau spot film device and photo-timer. Will consider any offer. Contact B. E. Mulvey, M.D., R. B. Price, M.D., or C. G. Coin, M.D. Phone CE 5-0511 or CE 6-4501, Oklahoma City.

AVAILABLE — Dictaphone Time-master, transistorized combination machine which records and plays back in one unit. Has never been used and is priced at more than \$100 below original price. Write: Dictaphone, 1201 Classen Drive, Oklahoma City; telephone CE 2-2178.

WANTED: General practitioner or internist to join established group. New clinic building with complete facilities. Excellent small community. No investment required. Call or write F. W. Hollingsworth, M.D., Canadian Valley Clinic, El Reno, Oklahoma. Phone AN 2-2114.

LOOKING FOR a G.P., or an M.D., not averse to doing G.P., as a Locum Tenens for two or three months this summer, while I am on short term medical mission service. Will furnish comfortable home and office, rent free, and will give all net proceeds from practice. Ideal situation for man finishing residency and awaiting assignment to service. May be able to adjust time to suit applicant's situation. Contact A. C. Hirshfield, M.D., 908 N.E. 50th Street, Oklahoma City 5, Oklahoma.

OUTSTANDING opportunity for a doctor or group of doctors to step into well established practice with a minimum of expense. Located 85 miles southwest of Oklahoma City, Carnegie has tri-county trade area of 15,000 people. Recent \$160,000 bond issue passed for purchasing and modernizing 20-bed hospital. Contact C. B. Sulivan, M.D., Carnegie, Oklahoma.

GENERAL PRACTITIONER needed in Billings, Oklahoma. Population approximately 600, with large trade territory. Five room doctor's office available. Hospital facilities available at Enid, Perry and Ponca City. Billings is located in rich wheat belt country. Excellent potential for a good M.D. Call or write: Aubrey Tipton, P.O. Box 246, Billings, Oklahoma. Phone RA 5-3424 or RA 5-3284.

CLINIC BUILDING for lease, 1,250 square feet floor space, six rooms, four-ton air conditioner. Reconditioned 100 milliamperage X-ray for sale, if needed. Located 308 N.E. 1st, Pryor, Oklahoma. Contact Warren G. Gwartney, M.D., Harvard Village, Professional Building, 2570 South Harvard, Tulsa, Oklahoma.

SOLO G.P. needs G.P. associate. Clinic facilities and hospital available. City of 4,500 with trade area of 10,000, convenient to Oklahoma City and Tulsa. No investment necessary. Salary for six months, percentage thereafter with minimum guarantee, to full partnership. Car furnished. Contact C. E. Woodard, M.D., Drumright. Telephone Area Code 918, Flanders 2-2555.

WANTED: Internist, with interest in cardiology, to take over established practice of Ray B. Graybill, M.D., deceased. Contact: Mrs. Ray B. Graybill, CA 3-1800; CA 3-1313 or C. D. Cunningham, M.D., CA 3-8210.

GENERAL Practitioner needed in Guymon, Oklahoma, in association with three-man general practice group. Good salary to start, with partnership later. Contact Medical Arts Clinic, 421 E. 13th, Guymon. Tel. 338-6506.

PROCEEDINGS

(Continued from Page 270)

either the opening or closing sessions of the annual meeting of the Oklahoma State Medical Association."

The question: Is this to be interpreted to mean nominations can be made in *both* the opening and closing sessions; or nominations can be made in the opening *or* the closing session (one or the other)?

A vote of the House was taken and it was determined that this section of the Bylaws should be interpreted as meaning nominations shall be made in the opening session of the House of Delegates.

Nominations were then open for the office of President-Elect (one year term of office).

Harlan Thomas, M.D., Tulsa, was nominated by Worth M. Gross, M.D., Tulsa.

Earl M. Lusk, M.D., moved to cease nominations, the motion was seconded and carried.

Nominations for the office of Vice-President were declared open (one year term of office).

R. R. Hannas, M.D., Sentinel, was nominated by E. K. Norfleet, M.D., Bristow.

E. H. Shuller, M.D., McAlester, was nominated by Floyd T. Bartheld, M.D., McAlester.

Rex Kenyon, M.D., moved to cease nominations, the motion was seconded and carried.

Nominations were declared open for the office of Delegate to the AMA (two year term of office).

Malcom E. Phelps, M.D., El Reno, was nominated to succeed himself by Alpha L. Johnson, M.D., El Reno.

E. K. Norfleet, M.D., moved to cease nominations, the motion was seconded and carried.

Nominations for the office of Alternate Delegate to the AMA were declared open.

Thomas C. Points, M.D., Oklahoma City, was nominated to succeed himself by Rex Kenyon, M.D., Oklahoma City.

Vernon D. Cushing, M.D., moved to cease nominations, the motion was seconded and carried.

Nominations were declared open for Trustees from Districts Nos. 2, 5, 8, 11, and 14.

District No. 2:

A. M. Evans, M.D., Perry, was nominated by E. Edwin Fair, M.D., Ponca City.

G. B. Gathers, M.D., Stillwater, was nominated by Edward M. Thorp, M.D., Cushing.

District No. 5:

Alpha L. Johnson, M.D., El Reno, was nominated by Ross Deputy, M.D., Clinton.

C. Riley Strong, M.D., El Reno, was nominated by Clinton Gallaher, M.D., Shawnee.

District No. 8:

Earl M. Lusk, M.D., Tulsa, was nominated by Worth M. Gross, M.D., Tulsa.

Samuel R. Turner, M.D., Tulsa, was nominated by Wendell L. Smith, M.D., Tulsa.

District No. 11:

Robert L. Loftin, M.D., Broken Bow, was nominated by Thomas E. Rhea, M.D., Idabel.

Henry D. Wolfe, M.D., Hugo, was also nominated by Thomas E. Rhea, M.D.

District No. 14:

C. L. Tefertiller, M.D., Altus, was nominated by R. R. Hannas, M.D., Sentinel.

J. B. Tolbert, M.D., Mountain View, was nominated by Doctor Hannas.

Wendell L. Smith, M.D., moved to cease nominations, the motion was seconded and carried.

AMA REPORTS

As the next order of business, the Delegates and Alternates of the AMA reported on recent activities of the AMA, as well as on future projects.

Next on the agenda was a report from the Board of Trustees.

TRUSTEES REPORTS

Doctor J. Hoyle Carlock read the Board of Trustees Report.

Malcom E. Phelps, M.D., moved

to change the word "magazine" in the sixth paragraph, to the word "Journal." The motion was duly seconded and carried.

Doctor Carlock moved that the Report of the Board of Trustees be approved, Doctor R. Q. Goodwin seconded the motion and it carried. (See Page 283)

The next item on the Agenda was the Treasurer's Report, read by Mark R. Johnson, M.D., OSMA Secretary-Treasurer.

TREASURER'S REPORT

After the report was read, Doctor Thomas Rhea asked if the money received from the \$10.00 raise in dues would be earmarked for public relations only, and Doctor Johnson answered that this money would not be earmarked for any specific purpose, but that it would primarily be used for public relations.

Doctor Johnson moved the approval of his report, Doctor Yale E. Parkhurst seconded the motion and it carried. (See Page 284)

Doctor Hart announced the next order of business would be the reports of the Association's five Councils.

COUNCIL REPORTS

COUNCIL ON PUBLIC HEALTH:
(See Page 287)

Doctor Paul D. Erwin, Chairman of the Council on Public Health, read the report and the following motions were made:

Doctor Mark R. Johnson moved to amend the report by deleting the first part of Paragraph 9, Section V to the word "Permission" and by adding a "comma" after the word "Oklahoma" and adding "financial details to be worked out at a later date." The motion was seconded by E. Edwin Fair, M.D., and the motion carried.

Doctor R. R. Hannas moved to amend Paragraph 13, Section V, by deleting the word "Establish" and beginning the paragraph with the words "Encourage the establishment of a." The motion was duly seconded and carried.

Doctor Erwin moved the approval of his report as amended, Doctor Wilkie D. Hoover seconded the motion and it carried.

Doctor Erwin then asked for a recommendation from the House as to whether or not the Council on Public Health should continue its health immunization program. A vote of the House was taken and it was recommended that the program be continued.

The meeting recessed at 12:20 p.m. for lunch and reconvened at 2:10 p.m.

The Chairman of the Credentials Committee declared a quorum present and the House continued with the reports of councils.

COUNCIL ON SOCIO-ECONOMIC ACTIVITIES: (See Page 289)

Doctor Wilkie D. Hoover, Chairman of the Council, said he would read Section I of the report, and Doctor E. M. Gullatt, Chairman of the Public Welfare Committee would read Section II.

After reading Section I, Doctor Hoover moved the approval of Recommendations No. 1 and 2, Doctor Parkhurst seconded the motion and it carried.

Doctor E. M. Gullatt read Section II and the following motions were made:

Doctor Gullatt moved approval of Recommendation No. 1, Doctor B. C. Chatham seconded the motion and it carried.

Doctor Gullatt moved approval of Recommendation No. 2, Doctor Chatham seconded the motion and it carried.

Doctor Gullatt moved approval of Recommendation No. 3, Doctor Chatham seconded the motion and it carried.

Doctor E. K. Norfleet moved to amend Recommendation No. 4 by deleting the words "Board of Trustees" at the end of the paragraph and substitute the words "House of Delegates" in place thereof. The motion was seconded by Doctor Parkhurst and carried.

Doctor Gullatt moved approval of

Recommendation No. 5, Doctor Chatham seconded the motion and it failed to carry.

Doctor Mark Johnson moved to amend Recommendation No. 6 by deleting the word "continuous" at the end of line 1, paragraph 2, and substitute the word "actual" and by inserting the words "and treatment" between the words "confinement" and "is" in the second line of the same paragraph. Doctor Ritzhaupt seconded the motion and it carried.

Doctor Hoover moved to accept the report as a whole as amended. Worth M. Gross, M.D., seconded the motion and it carried.

COUNCIL ON PROFESSIONAL EDUCATION: (See Page 291)

R. R. Hannas, M.D., Chairman of the Council, read the report and moved its approval. Doctor Earl Lusk seconded the motion and it carried.

COUNCIL ON PUBLIC POLICY: (See Page 291)

Rex E. Kenyon, M.D., Chairman of the Council read the report and moved the approval of same. Doctor Parkhurst seconded the motion and it carried.

Clinton Gallaher, M.D., Chairman of the Financial Aid to Education Committee, read a report on the activities of his committee. (See Page 293)

COUNCIL ON INSURANCE: (See Page 294)

R. Q. Goodwin, M.D., Chairman of the Council read his report by sections.

Section I—Group Insurance Committee: A. Term Life Insurance: Doctor Goodwin moved that this part of the report be approved. Doctor Parkhurst seconded the motion and it carried.

B. Disability Income Insurance: Doctor Goodwin moved that this part of the report be approved. It was seconded by Doctor Parkhurst and carried.

C. Overhead Expense Insurance: Doctor Goodwin moved that this part

of the report be approved. Doctor Parkhurst seconded the motion and it carried.

D. Employees Retirement Program: Doctor Goodwin moved that this part of the report be approved. Doctor Parkhurst seconded the motion and it carried.

Section II—Professional Liability Committee: Doctor Goodwin read this portion of the report and moved its approval. The motion was seconded by Doctor Parkhurst and carried.

Doctor Goodwin then moved the approval of the report as a whole; the motion was duly seconded and carried.

RESOLUTIONS

Referring to the next item on the agenda, "Introduction of Resolutions," Doctor Hart told the House that the thirty-five resolutions listed on the agenda had been mailed to the Executive Office thirty days prior to the meeting; and had been reviewed by the Resolutions Committee and assigned to the various Reference Committees. He said in addition to these the House will consider Resolutions No. 36, 37, and 38 submitted by the Board of Trustees.

Doctor Cecil R. Stansberry asked for a point of order to review the resolution pertaining to House Joint Resolution No. 535, which recommends the construction of a new six hundred bed hospital at the University of Oklahoma Medical Center.

Doctor Hart said this resolution had been considered by the Board of Trustees at its meeting on May 2nd, and they had voted to take no action on this resolution.

After a lengthy discussion, it was the sentiment of the majority of the Delegates that this question should come before the House and not before the public.

Doctor Ritzhaupt moved to submit the resolution to the House of Delegates. Doctor Stansberry seconded the motion and a vote was taken. Vote: Ayes—55

Nays—38

The resolution was designated as Resolution No. 39, and was referred

to the Legislation and Public Policy Reference Committee.

The following resolutions will be considered by the Reference Committees and acted upon in the Closing Session:

Resolution No. 1, submitted by Comanche-Cotton County Medical Society, entitled "OSMA Endorsement of AMPAC and OMPAC," referred to Legislation and Public Policy Committee.

Resolution No. 2, submitted by Carter-Love-Marshall County Medical Society, entitled "Mental Health in the State of Oklahoma," referred to Miscellaneous Business Committee.

Resolution No. 3, submitted by Pottawatomie County Medical Society, entitled "Compensation of Interns and Residents," referred to Insurance and Medical Service Committee.

Resolution No. 4, submitted by Pottawatomie County Medical Society, entitled "Blue Shield Indemnity Contract," referred to Insurance and Medical Service Committee.

Resolution No. 5, submitted by Pottawatomie County Medical Society, entitled "AMPAC and OMPAC," referred to Legislation and Public Policy Committee.

Resolution No. 6, submitted by Pottawatomie County Medical Society, entitled "Relative Value Schedules," referred to Miscellaneous Business Committee.

Resolution No. 7, submitted by Pottawatomie County Medical Society, entitled "Areawide Planning for Hospitals," referred to Insurance and Medical Service Committee.

Resolution No. 8, submitted by Pottawatomie County Medical Society, entitled "Mental and Public Health," referred to Legislation and Public Policy Committee.

Resolution No. 9, submitted by Pottawatomie County Medical Society, entitled "Liberty Amendment," referred to Legislation and Public Policy Committee.

Resolution No. 10, submitted by Pottawatomie County Medical Soci-

ety, entitled "Statement of Principle," referred to Miscellaneous Business Committee.

Resolution No. 11, submitted by Pittsburg County Medical Society, entitled "Payment of Physicians for Crippled Children's Service," referred to Insurance and Medical Service Committee.

Resolution No. 12, submitted by OSMA Resolutions Committee, entitled "Participation of the AMA As Observers in the World Health Organization," referred to Miscellaneous Business Committee.

Resolution No. 13, submitted by Tulsa County Medical Society, entitled "Amending the Medical Practice Act to Permit Foreign Medical Graduates to Serve as Residents in Recognized Teaching Hospitals of Oklahoma," referred to Legislation and Public Policy Committee.

Resolution No. 14, submitted by Tulsa County Medical Society, entitled "Air Pollution Control," referred to Legislation and Public Policy Committee.

Resolution No. 15, submitted by Tulsa County Medical Society, entitled "OSMA Endorsement of AMPAC and OMPAC," referred to Legislation and Public Policy Committee.

Resolution No. 16, submitted by Tulsa County Medical Society, entitled "Free Choice of Physician in Workmen's Compensation Cases," referred to Insurance and Medical Service Committee.

Resolution No. 17, submitted by Tulsa County Medical Society, entitled "Immunization Education Program," referred to Miscellaneous Business Committee.

Resolution No. 18, submitted by Tulsa County Medical Society, entitled "Immunization by Public Health Departments," referred to Miscellaneous Business Committee.

Resolution No. 19, submitted by Craig-Delaware-Ottawa County Medical Society, entitled "Oklahoma Mental Health Program," referred to Legislation and Public Policy Committee.

Resolution No. 20, submitted by Choctaw-Pushmataha County Medical

Society, entitled "Payment of Physicians for Crippled Children's Services," referred to Insurance and Medical Service Committee.

Resolution No. 21, submitted by Garfield-Kingfisher County Medical Society, entitled "Payment of Physicians for Crippled Children's Services," referred to Insurance and Medical Service Committee.

Resolution No. 22, submitted by Oklahoma County Medical Society, entitled "OMPAC," referred to Legislation and Public Policy Committee.

Resolution No. 23, submitted by Oklahoma County Medical Society, entitled "Federal Production of Goods and Services," referred to Legislation and Public Policy Committee.

Resolution No. 24, submitted by Oklahoma County Medical Society, entitled "Mental and Public Health," referred to Legislation and Public Policy Committee.

Resolution No. 25, submitted by Oklahoma County Medical Society, entitled "Comprehensive Areawide Community Health Surveys," referred to Miscellaneous Business Committee.

Resolution No. 26, submitted by Oklahoma County Medical Society, entitled "Membership—U.S. Chamber of Commerce," referred to Insurance and Medical Service Committee.

Resolution No. 27, submitted by Oklahoma County Medical Society, entitled "Appropriation for Medical Examiners Law," referred to Insurance and Medical Service Committee.

Resolution No. 28, submitted by Washington-Nowata County Medical Society, entitled "Relative Value Schedules," referred to Insurance and Medical Service Committee.

Resolution No. 29, submitted by Washington-Nowata County Medical Society, entitled "AMPAC and OMPAC," referred to Legislation and Public Policy Committee.

Resolution No. 30, submitted by Washington-Nowata County Medical Society, entitled "Blue Shield Indemnity Contract," referred to In-

surance and Medical Service Committee.

Resolution No. 31, submitted by Washington-Nowata County Medical Society, entitled "The Bauer Statement," referred to Legislation and Public Policy Committee.

Resolution No. 32, submitted by OSMA Resolutions Committee, entitled "Preceptorship Program," referred to Insurance and Medical Service Committee.

Resolution No. 33, submitted by OSMA Resolutions Committee, entitled "Foreign Interns and Residents," referred to Miscellaneous Business Committee.

Resolution No. 34, submitted by OSMA Resolutions Committee, entitled "Attendance at AMA Specialty Meetings Without Being Identified With Specialty Groups in AMA Directory," referred to Miscellaneous Business Committee.

Resolution No. 35, submitted by OSMA Resolutions Committee, entitled "Amending the Bylaws of the OSMA Lowering the Number for a Quorum at any House of Delegates Meeting," referred to Constitution and Bylaws Committee.

Resolution No. 36, submitted by Wendell L. Smith, M.D., Trustee, entitled "Mental Health In Oklahoma," referred to Legislation and Public Policy Committee.

Resolution No. 37, submitted by Walter E. Brown, M.D., Trustee, entitled "Compulsory Membership in the American Medical Association," referred to Miscellaneous Business Committee.

Resolution No. 38, submitted by E. E. Shircliff, M.D., Trustee, entitled "Lifetime Learning For Physicians," referred to Miscellaneous Business Committee.

Resolution No. 39, submitted by Cecil R. Stansberry, M.D., entitled "Reconsideration of House Joint Resolution No. 535," referred to Legislation and Public Policy Committee.

Doctor Hart announced the last order of business in the Opening Session would be the reading of the Necrology Report.

Recognizing the medical profes-

sion's loss in the untimely death of Doctor Peter E. Russo on March 13, 1963, Doctor C. M. Hodgson read a resolution honoring the late President-Elect of the Oklahoma State Medical Association.

A MEMORIAL

WHEREAS, Peter E. Russo, M.D. is acknowledged as an outstanding personality and benefactor in the history of Oklahoma Medicine; and

WHEREAS, the profession and the people it serves have been enriched by association with him, both personally and professionally; and

WHEREAS, the Oklahoma State Medical Association has been deprived of his wisdom and experience as president of this association.

NOW, THEREFORE, BE IT RESOLVED, that the House of Delegates, duly assembled in Tulsa for the Annual Meeting of the association on May 3, 1963, expresses sincere appreciation for this man's work and officially acknowledges the loss to the profession;

AND BE IT FURTHER RESOLVED, that the physicians here assembled extend to the family our deepest sympathy.

NECROLOGY REPORT

Doctor Hodgson asked the Delegates to stand during the reading of the Necrology Report.

John H. Barham, M.D. Tulsa
John F. Capps, M.D. Midwest City
William W. Cotton, M.D. Poteau
Lloyd E. Crick, M.D. Oklahoma City
John A. Cunningham, M.D.

..... Oklahoma City
Samuel C. Dean, M.D. Howe
Raymond S. Echols, M.D. Tulsa
Phillips R. Fife, M.D. Guthrie
Onis Franklin, M.D. Broken Arrow
Robert E. Funk, M.D. Tulsa
Ray B. Graybill, M.D. Ardmore
Harold W. Hackler, M.D. Norman
Richard A. Harkins, M.D. McAlester
Millard L. Henry, M.D. McAlester
Robert M. Howard, M.D.
..... Oklahoma City

Laurence Doyle Hudson, M.D.
..... Dewey
J. Sherwood Jacoby, M.D.
..... Commerce
Russell H. Lynch, M.D. Hollis
Joseph T. Martin, M.D.
..... Oklahoma City
Grady F. Mathews, M.D.
..... Oklahoma City
Leonidas H. McConnell, M.D. Altus
Roy J. Melinder, M.D. Claremore
O. H. Miller, M.D. Oklahoma City
Ernest Dale Mitchell, M.D.
..... Oklahoma City
Dayton M. Rose, M.D. Okemah
Peter E. Russo, M.D.
..... Oklahoma City
Reuben E. Sawyer, M.D. Durant
Harry B. Spaulding, M.D. Ralston
Gregory E. Stanbro, M.D.
..... Oklahoma City
Marvin E. Stout, M.D.
..... Oklahoma City
Curt O. Von Wedel, M.D.
..... Oklahoma City
Tom L. Wainwright, M.D. Mangum
Willis K. West, M.D.
..... Oklahoma City
John Clay Williams, M.D. Durant
Herbert A. Wilson, M.D. McAlester
Neil W. Woodward, M.D.
..... Oklahoma City

Doctor Hart announced the House of Delegates would recess and reconvene at 8:00 p.m. He said during the recess the Reference Committees would meet, and urged the Delegates to attend the meetings.

The meeting recessed at 4:10 p.m.

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CLOSING SESSION

The Closing Session of the 57th Annual Meeting of the House of Delegates of the Oklahoma State Medical Association was called to order by the Speaker, Marshall O. Hart, M.D., at 8:10 p.m., on May 3, 1963, in the Pompeian Court of the Mayo Hotel, Tulsa, Oklahoma.

The Credentials Committee Chairman reported a quorum present.

The Speaker announced the first order of business in the Closing Session would be reports from the Reference Committees:

REPORTS AND RESOLUTIONS

CONSTITUTION AND BYLAWS COMMITTEE:

Doctor E. K. Norfleet, Chairman, gave the following recommendation concerning the resolution referred to the committee:

Resolution No. 35. (See Page 302)

The Committee recommended that the "Resolve" be deleted and substituted with the following:

"NOW, THEREFORE, BE IT RESOLVED, that Section 3.03 of Chapter III, of the Bylaws be changed to read:

"A majority of the certified and qualified delegates shall constitute a quorum at the annual meeting. One-third of the certified and qualified delegates shall constitute a quorum at special or called meetings."

It was moved and seconded that the resolution be approved as amended by the Reference Committee. Motion carried.

COMMITTEE ON INSURANCE AND MEDICAL SERVICE:

Doctor Harlan Thomas, Chairman, gave the following recommendations concerning the resolutions referred to the committee:

Resolution No. 27. (See Page 301)

The committee recommended that this resolution be amended by changing the words "Oklahoma County Medical Society" to "Oklahoma State Medical Association" in the first "Resolve"; insert the words "when available" between the words "appropriated" and "as" in the same paragraph; and delete the last "Resolve."

It was moved and seconded to approve Resolution No. 27 as amended by the Reference Committee. Motion carried.

Resolution No. 7. (See Page 297)

The committee recommended this resolution be amended by substituting the second "Resolve" with the following:

"BE IT FURTHER RESOLVED,

that our AMA Delegates be instructed to oppose any similar plans introduced in the AMA House of Delegates in June, 1963."

It was moved and seconded to approve Resolution No. 7 as amended by the Reference Committee. Motion carried.

Resolution No. 3. (See Page 296)

The committee recommended that this resolution be amended by substituting the last "Resolve" with the following:

"BE IT FURTHER RESOLVED, that our AMA Delegates be instructed to oppose any similar proposals at the AMA Annual Meeting in June, 1963."

It was moved and seconded that Resolution No. 3 be approved as amended by the Reference Committee. Motion carried.

Resolutions No. 4 and 30. (See No. 4, Page 296)

Due to the similarity of these resolutions, the committee considered them concurrently. The committee recommended approval of No. 4 with the deletion of the last "Resolve"; and changing the title to read: "National Blue Shield Service Contract."

It was moved and seconded to approve Resolution No. 4, as amended by the Reference Committee. Motion carried.

Resolutions No. 6 and 28. (See No. 6, Page 296)

Due to the similarity of these resolutions, the committee considered them concurrently, and recommended the approval of No. 6, with the deletion of the last "Resolve."

It was moved and seconded to approve Resolution No. 6, as amended by the Reference Committee. Motion carried.

Resolutions No. 11, 20, and 21. (See No. 11, Page 298)

Due to the similarity of these resolutions, the committee recommended the approval of No. 11, and that it be amended by changing the title to read: "Payment of Physicians for Services Rendered to Welfare Recipients"; delete the first two

"Whereases"; substitute the words "welfare jurisdiction" for the words "the Crippled Children's Act" in paragraph No. 1 of the Resolve; delete the words "Public Welfare" and insert the words "State Legislative" in paragraph No. 2; delete the words "Crippled Children's Act" and insert the words "present law" in the same paragraph; and delete paragraph No. 3.

It was moved and seconded that Resolution No. 11 be approved as amended by the Reference Committee. Motion carried.

Resolution No. 16. (See Page 299)

The committee recommended approval of No. 16 as written.

It was moved and seconded to approve Resolution No. 16. Motion carried.

Resolution No. 32. (See Page 301)

The committee recommended approval of No. 32 as written.

It was moved and seconded to approve Resolution No. 32. Motion carried.

Resolution No. 26. (See Page 301)

The committee recommended that Resolution No. 26 be amended by deleting the first "Resolve" and replacing it with the last "Resolve."

A motion was made and seconded to approve Resolution No. 26 as amended by the Reference Committee. Motion carried.

Doctor Thomas moved to adopt the report as a whole. Doctor Earl M. Lusk seconded the motion and it carried.

COMMITTEE ON LEGISLATION AND PUBLIC POLICY:

Resolutions No. 1, 5, 15, 22 and 29. (See No. 1, Page 295)

The committee recommended approval of No. 1 since the other resolutions were almost identical in content.

Doctor Francis Davis moved to add the second resolve of Resolution No. 5 to Resolution No. 1. Doctor Worth M. Gross seconded the motion. After Doctor Homer D. Hardy pointed out that this would require a transfer of funds to OMPAC, and the

House of Delegates did not have sufficient authority to consider it at this time, a vote was taken and the motion failed to pass.

A motion was made and seconded to approve Resolution No. 1 as written. The motion carried.

Resolutions No. 8 and 24. (See No. 24, Page 300)

Since Resolutions No. 8 and 24 were similar in intent, the committee recommended approval of Resolution No. 24, after the following changes:

Omit the last paragraph, and end the next to the last paragraph with the words "Oklahoma State Medical Association."

It was moved and seconded to approve Resolution No. 24 and the motion carried.

Resolutions No. 19 and 36. (See No. 36, Page 302)

The committee recommended approval of Resolution No. 36 after the following changes:

In the "Resolve" amend it to read: "that the recommendations of the Oklahoma District Branch of the American Psychiatric Association be endorsed by the Oklahoma State Medical Association:" and, under paragraph D, page 3, insert the words "and adequate local funds" between the words "staff" and "under."

A motion was made and seconded to approve Resolution No. 36 as amended by the committee. Motion carried.

Resolutions No. 9 and 23. (See No. 9, Page 297)

It was recommended by the committee that Resolution No. 9 be approved after amending it by deleting the last "Resolve."

A motion was made and seconded to approve No. 9 as amended by the committee. Motion carried.

Resolution No. 13. (See Page 298)

The committee recommended that this resolution be disapproved.

A motion was made and seconded to disapprove Resolution No. 13. Motion carried.

Resolution No. 14. (See Page 299)

The committee recommended approval of this resolution as written.

A motion was made and seconded to approve Resolution No. 14 as written. Motion carried.

Resolution No. 31. (See Page 301)

The committee recommended approval of this resolution as written.

A motion was made and seconded to approve Resolution No. 31 as written. Motion carried.

Resolution No. 39. (See Page 303)

The committee made no recommendation on this resolution.

A motion was made and seconded that no action be taken on Resolution No. 39. Motion carried.

Doctor Kenyon moved that the report of the Reference Committee on Legislation and Public Policy be adopted as a whole. Motion was seconded and carried.

COMMITTEE ON MISCELLANEOUS BUSINESS:

R. Q. Goodwin, M.D., Chairman, gave the following recommendations concerning resolutions referred to the committee:

Resolution No. 2. (See Page 295)

The committee recommended approval of this resolution after the following amendment:

Strike the last line of the resolution and substitute the words "at a local level, preferably with private funds."

A motion was made and seconded to approve Resolution No. 2 as amended by the committee. Motion carried.

Resolution No. 10. (See Page 297)

The committee recommended the approval of Resolution No. 10 after the following amendment:

Delete the last two paragraphs and substitute the following paragraph:

"AND BE IT FURTHER RESOLVED, that the AMA Delegates be instructed to support the intent of the above statement."

A motion was made and seconded to approve Resolution No. 10 as

amended by the committee. Motion carried.

Resolution No. 12. (See Page 298)

The committee recommended approval of this resolution after the following amendment: Delete the last paragraph and substitute:

"NOW, THEREFORE, BE IT RESOLVED, that our Delegates to the AMA support observation in the WHO through membership in the National Citizens Committee, unless they become convinced that such participation would constitute endorsement of this organization."

A motion was made and seconded to approve Resolution No. 12 as amended by the committee. Motion carried.

Resolution No. 17. (See Page 299)

The committee recommended approval of this resolution after making the following amendment: Strike the remainder of the last paragraph beginning with the word "and" in next to the last line and insert the words "whenever possible."

A motion was made and seconded to approve Resolution No. 17 as amended by the committee. Motion carried.

Resolution No. 18. (See Page 300)

The committee recommended that interested individuals work in cooperation with both the local and state health organizations in bringing forth a set solution to this problem.

A motion was made and seconded to disapprove Resolution No. 18. Motion carried.

Resolution No. 25. (See Page 300)

It was the recommendation of the committee to approve this resolution after the following amendments are made:

In the fourth paragraph change the words "Oklahoma County Medical Society" to "Oklahoma State Medical Association"; place a period after the words "and welfare" in the same paragraph and delete the remainder of the sentence.

In paragraph No. 5, change the

words "Oklahoma County Medical Society" to "Oklahoma State Medical Association" and end the paragraph with the word "projects."

In the last paragraph change the words "Oklahoma County Medical Society" to "Oklahoma State Medical Association"; delete the words "to be" and insert the words "from being" and end the paragraph with the word "financing."

A motion was made and seconded to approve Resolution No. 25 as amended by the committee. Motion carried.

Resolution No. 33. (See Page 302)

The committee recommended approval of this resolution as written.

A motion was made and seconded to approve Resolution No. 33 as written. Motion carried.

Resolution No. 34. (See Page 302)

The committee recommended that this resolution be disapproved.

A motion was made and seconded to disapprove Resolution No. 34. Motion carried.

Resolution No. 37. (See Page 303)

The committee recommended the approval of this resolution after making the following amendments: In the Subject, delete the word "Compulsory"; in the first paragraph, replace the word "compulsory" with the word "required"; in the second paragraph delete the words "compulsory" and "only"; in the fourth paragraph delete the word "compulsory" and insert the word "required" in place thereof; and substitute the last paragraph with the following:

"AND BE IT FURTHER RESOLVED, that the results of this referendum be published in the *Journal* of the Oklahoma State Medical Association."

A motion was made and seconded to approve Resolution No. 37 as amended by the reference committee. Motion carried.

Resolution No. 38. (See Page 303)

The committee recommended the approval of Resolution No. 38 after

making the following amendments: Delete the fifth paragraph and change the sixth paragraph to read:

"AND BE IT FURTHER RESOLVED, that our Delegates to the AMA be instructed to support submitting the Dryer Report to a reference committee for study and the determining of its logical role in Postgraduate Education together with present facilities and efforts existing in American Medicine today."; and delete the last paragraph.

It was moved and seconded to approve Resolution No. 38 as amended by the committee. Motion carried.

Doctor Goodwin moved that the report of Reference Committee on Miscellaneous Business report be adopted as a whole. The motion was seconded and carried.

ELECTION OF OFFICERS

Doctor Hart announced the next order of business would be the election of officers. He stated that there would be no further nominations for officers in the House of Delegates.

The first office to be filled was that of PRESIDENT.

Joe L. Duer, M.D., and J. R. Stacy, M.D., were announced as those nominated during the Opening Session. A ballot vote was taken and the Tellers were instructed to tabulate the votes. Doctor Duer received 61 votes and Doctor Stacy received 37. Doctor Hart announced Doctor Joe L. Duer was elected President. The Sergeant at Arms then escorted Doctor Duer to the platform.

The next office to be filled was that of PRESIDENT-ELECT.

It was moved and seconded that Harlan Thomas, M.D., nominated during the Opening Session, be elected by acclamation. The motion carried. The Sergeant at Arms escorted Doctor Thomas to the platform.

The next office was that of VICE-PRESIDENT.

R. R. Hannas, M.D., and E. H. Shuller, M.D., were announced as those nominated during the Opening Session. A ballot vote was taken and Doctor Hannas received 48 votes; Doctor Shuller received 35 votes. The

Speaker announced Doctor Hannas was elected Vice-President. The Sergeant at Arms escorted Doctor Hannas to the platform.

Malcom E. Phelps, M.D., was voted by acclamation to succeed himself as DELEGATE TO THE AMA. The Sergeant at Arms escorted Doctor Phelps to the platform.

Thomas C. Points, M.D., was voted by acclamation to succeed himself as ALTERNATE DELEGATE TO THE AMA. The Sergeant at Arms escorted Doctor Points to the platform.

The next order of business was the election of Trustees for Districts No. 2, 5, 8, 11, and 14.

The following Trustees were elected by acclamation:

DISTRICT NO. 2: A. M. Evans, M.D., Perry; G. B. Gathers, M.D., Stillwater.

DISTRICT NO. 5: A. L. Johnson, M.D., El Reno; C. Riley Strong, M.D., El Reno.

DISTRICT NO. 8: Earl M. Lusk, M.D., Tulsa; Samuel R. Turner, M.D., Tulsa.

DISTRICT NO. 11: Robert L. Loftin, M.D., Broken Bow; Henry D. Wolfe, M.D., Hugo.

DISTRICT NO. 14: C. L. Tefer-tiller, M.D., Altus; J. B. Tolbert, M.D., Mountain View.

The 57th Annual Meeting of the House of Delegates of the Oklahoma State Medical Association was adjourned by the Speaker, Marshall O. Hart, M.D., at 9:15 p.m.

Recorded by Martina Doyle

* * *

REPORTS AND RESOLUTIONS

REMARKS OF THE SPEAKER

Welcome to all members and guests of the OSMA for the 57th annual assembly. It is indeed inspiring to see and feel the enthusiasm you portray. We have considerable business to transact and with your cooperation it will be done. I want to express my appreciation and gratitude to you for the privilege of being your Speaker. Together we have the

duty and privilege of taking steps, the effect of which will improve the welfare of our Nation, as physicians and citizens, exercising the duty of maintaining our freedom, and contributing our talents and substance that this Nation, under God, shall continue to be the citadel of hope, freedom, and liberty. Your officers, committees, and employees have devoted considerable time and effort that this meeting shall succeed. The spirit of cooperation has characterized its every step. The committee reports and resolutions reflect considerable work for your consideration. I should like to call your special attention to your portfolio, and urge you to become familiar with its contents. The agenda is self explanatory; if you will follow it, it will certainly improve performance and interest in the proceedings. You also have been sent some material for the help of delegates. This, of course, will be of more assistance to new delegates, but I believe it will help all delegates. It is patterned after the AMA. I hope you will study it, and let me or our state office know if you approve or disapprove. This is new so far as we are concerned, and its continuance or elimination depends on you. Personally, I think it is good, but my opinion may be biased.

REFERENCE COMMITTEES: I cannot emphasize too strongly the need for all delegates, alternates, and members of OSMA to attend these committees, and speak. The affairs, problems, and recommendations of this body emanate from these committees. If due and proper consideration is had here, it will tremendously aid the committee in its work, and will alleviate extended debate on the floor of the House. The only way this meeting can be held to one day and do justice is for the Reference Committees to be so well prepared that their conclusions are accepted on the floor of the House. The place for debate and discussion properly belongs in Reference Committee. Briefly, I call your attention to a few fundamental principles of Parliamentary Procedure which will influence us:

1. Parliamentary rules exist to facilitate the transaction of business and to promote cooperation and harmony.

2. The vote of the majority decides.

3. All members have equal rights, privileges and obligations.

4. The majority have rights which must be protected.

5. Full and free discussion of every proposition presented for discussion is an established right.

6. The most simple and direct procedure for accomplishing a purpose should be followed.

7. Motions have a definite and logical order of precedence.

8. Every member has the right to know at all times what question is before the assembly and what its effect will be.

9. Only one question can be considered at a time.

10. Those to whom power is delegated must be chosen by democratic processes.

From "Sturgis Code of Parliamentary Procedure"

Thank you.

TRUSTEES REPORT

GENERAL

It has been another active year for the Oklahoma State Medical Association. At the state, county and individual levels, physicians are becoming more responsive to the expanding responsibilities confronting them as individual practitioners and, collectively, as members of organized medicine. We must not be satisfied, however, until we achieve even greater unity of purpose and transform this unity into greater individual effort.

The profession is challenged by multiple forces, all of which can be overcome by our individual and collective deeds. Excellence in our medical practice, the unified activities of our organizations, and responsiveness to the needs of the public we serve are basic weapons against the

planned overthrow of freedom in health care.

Much of the President's program has been accomplished during the 1962-63 organizational year, as will be reported by the Council and Committee Chairmen. The accomplishments are to the credit of those who have worked hard for the organization, but the profession-at-large is admonished that the efforts of committees, officers and association employees do not relieve the general membership of the major responsibility for a successful organization.

In addition to the activities to be reported by the Councils and Committees, your attention is called to the following matters which will not be reported elsewhere during this annual meeting.

The Executive Office: The year was begun with a new Executive Secretary, Mr. Don Blair, and it was three months until an assistant, Mr. Dwight Whelan was hired. Moreover, two additional employees left the association for personal reasons, so this year has necessitated the training of a central office staff in addition to an unusually heavy work load.

The Journal: It was reported at the 1962 annual meeting that the *Journal* of the association was singularly honored by its selection as the outstanding state society publication in the nation. Under the leadership of the new Editor-in-Chief, C. B. Dawson, M.D., the *Journal* has maintained its quality, and was honored last October by the State Medical Journal Advertising Bureau as one of the top five state publications.

Public Relations: The present association budget permits an allocation of only \$2,500 annually for public relations, an amount felt to be inadequate in terms of today's needs. At a September 15th meeting of the Board of Trustees, a \$10 per year dues increase was favorably considered for the purpose of strengthening the association's public relations program.

The Board's recommendation is herewith transmitted to the House of Delegates for final decision.

To fill the immediate gap in public relations financing, the Board authorized the Council on Public Policy to use up to \$10,000 in association reserves. However, it has not been necessary to use any of the reserve funds to date.

Candidate For AMA Board of Trustees: John F. Burton, M.D., Oklahoma City, has been named by the association as a candidate for election to the Board of Trustees of the American Medical Association. The election will be held in Atlantic City, June 20, 1963.

Student AMA Banquet: The traditional banquet for members of the Oklahoma University Chapter of the Student AMA was again authorized by the Board of Trustees. More than two hundred students and wives, guests of the OSMA, heard a presentation on Federal legislation by Ernest B. Howard, M.D., Assistant Executive Vice-President of the AMA.

Annual Meeting: The 57th Annual Meeting, which begins today, has been well-planned by physicians of the Tulsa County Medical Society. The efforts of Donald L. Brawner, M.D., General Chairman, and Howard A. Bennett, M.D., Program Chairman, and all others concerned, are deeply appreciated by the Board of Trustees.

Social Security Poll: Last Fall, the Board of Trustees authorized a mail ballot of the entire membership on the subject of compulsory coverage of physicians under the Social Security Act. Out of 1,254 replies, 925 voted against Social Security coverage and 312 favored it. There were 17 who declined to vote due to insufficient knowledge of the issue.

Nominations For State Appointments: Governor Bellmon has made several appointments to state boards based on nominations submitted by the Board of Trustees: Edgar W. Young, M.D., El Reno, was named to fill the unexpired term of C. Riley Strong, M.D., who resigned from the Board of Medical Examiners. Bert T. Brundage, M.D., Thomas, has been appointed to the Board of Health

and Charles E. Smith, M.D., Oklahoma City, has been appointed to the Board of Mental Health. The Governor has also named a physician from Lawton to the Board of Health (Eugene Owens, M.D.), but he was not one of the OSMA nominees, and there is an additional Board of Health vacancy for which OSMA candidates are being considered.

MEMBERSHIP

The following membership figures are reported as of this date, which represent a growth over last year of 35 members:

Dues-Paying Members	1,756
Applications Pending	39
Honorary-Life Members	120
Junior Members	31
Associate Members	4
<hr/>	
Total	1,950

Honorary-Life Memberships have been requested by county medical societies for the following physicians:

George A. DeTar, M.D., Miami
N. Price Eley, M.D., Oklahoma City

Samuel Goodman, M.D., Tulsa
Silas G. Hamm, M.D., Haskell
C. A. Hicks, M.D., Holdenville
Margaret G. Hudson, M.D., Tulsa
S. E. Johnson, M.D., Muskogee
G. A. Kilpatrick, M.D., Henryetta
G. Y. McKinney, M.D., Henryetta
John W. Pendleton, M.D., Kingfisher
C. F. Walker, M.D., Grove

BOARD OF TRUSTEES SUPPLEMENTAL REPORT

In addition to the thirty-five resolutions which were received thirty days prior to the meeting of the House of Delegates, the following resolutions were approved by the Board of Trustees, May 2, 1963, for late submission:

Resolution No. 36: Introduced by: Wendell L. Smith, M.D., Trustee; Subject: Mental Health in Oklahoma.

Resolution No. 37: Introduced by: Walter E. Brown, M.D., Trustee; Subject: Compulsory Membership in The American Medical Association.

Resolution No. 38: Introduced by: E. E. Shircliff, M.D., Trustee; Subject: Lifetime Learning for Physicians.

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REPORT OF THE TREASURER

At the 1962 annual meeting, both the Board of Trustees and the House of Delegates agreed to change the association's accounting system to a fiscal year, beginning June 1st and ending May 31st.

In addition, bookkeeping and budgeting procedures were updated to conform to the present organizational structure of the association. Quarterly financial statements have been prepared in the Executive Office in order to periodically check expenditures against the budget.

It can be reported in 1963 that the changes instituted last year have resulted in closer control of association funds. Expenditures have generally followed the budget for the organizational year and the financial efficiency of the association has materially improved.

In last year's report, it was pointed out that the change to a fiscal year (to coincide with the term of each elected administration) would necessitate the presentation of an estimated financial statement at the annual meeting, to be followed in July by an auditor's report mailed to each member of the House of Delegates.

Based upon *actual* income and expenses for the first ten months of the fiscal year, as well as *anticipated* income and expenses for the remaining two months, the following financial statement is submitted:

FINANCIAL STATEMENT

(Estimated for Year Ending May 31, 1963)

INCOME

Membership Dues	\$ 70,500.00
Scholarship and Loan Fund (from dues)	8,500.00
Journal	34,000.00
Annual Meeting	11,000.00
Interest from Savings	2,225.00
Miscellaneous	1,150.00

TOTAL INCOME	\$127,375.00
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EXPENSE

Fixed Expenses	\$ 55,000.00
Depreciation	2,000.00

Councils and Committees:

Public Policy	\$3,500.00
Insurance	—0—
Professional Education	1,979.00
Socio-Economic Activities	231.00
Public Health	683.00

6,393.00

In-State Travel	327.00
Out-of-State Travel	5,518.00
Annual Meeting	11,000.00
Scholarships and Loans	8,500.00
Journal	32,946.00

TOTAL EXPENSE	\$121,684.00
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*NET SURPLUS	\$ 5,691.00
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*Includes Equipment Purchases:

Refrigerator	\$ 275.00
Two Dictating Machines	1,747.00
One Movie Projector and Screen	522.00
Shelving	271.00
Addressograph	2,134.00
Air Conditioner Modification	1,482.00

Total	\$5,431.00
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SAVINGS

Ponca City Savings and Loan (1957)	\$ 10,000.00
Home Savings and Loan (Lawton) (1957)	10,000.00
Home Savings and Loan (Bartlesville) (1959)	\$2,798.16
(1960)	7,201.84

10,000.00

Durant Building and Loan (1960)	10,000.00
Tulsa Federal Savings and Loan (1961)	10,000.00

Oklahoma City Federal Savings and Loan (1961)	\$1,860.27
(1962)	1,161.72
(1-10-63)	1,062.50

Earned Interest as of 5-31-63	1,081.69
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5,166.18

TOTAL	\$ 55,166.18
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It is significant to note that association operating expenses have been cut approximately \$12,000.00 this year, while income has remained at about the same level as the last accounting period.

National advertising revenue in the *Journal* continues to decline, although it appears to be leveling off after several successive years of severe cutbacks by national medical journal advertisers. For the first quarter of 1963, the State Medical Journal Advertising Bureau reports that net

billing is down 15 per cent from the same period a year ago.

The prognosis of the advertising problem will depend directly upon the degree of regimentation the federal government finally imposes upon the pharmaceutical industry.

Membership dues are now \$47.00 per year, including \$5.00 earmarked for the Financial Aid to Education Program. Prior to the \$5.00 increase (effective in 1962), association dues had not been increased since 1948.

As previously reported by the Board of Trustees, a \$10.00 dues increase is being recommended for

implementation in 1964 for the purpose of improving the public relations capabilities of the association.

The following budgets for organizational and *Journal* activities are submitted on the basis of known revenue expectations. If the proposed dues increase is accepted by the House of Delegates, an additional \$17,000 in dues will be collected in 1964. Since the budget period under consideration (June 1, 1963 to May 31, 1964) includes five months of 1964, passage of the recommended dues increase will add a prorated amount of approximately \$7,000 to the budgets printed below.

BUDGET A—ORGANIZATIONAL ACTIVITIES

INCOME

Membership Dues	\$ 71,000.00
Scholarship and Loan Fund (from dues)	8,500.00
Interest from Savings	2,389.00
Miscellaneous Income	1,500.00
Annual Meeting—Booth Rental	\$8,500.00
Ticket Sales	2,500.00
	11,000.00
TOTAL INCOME	\$ 94,389.00

EXPENSE

Fixed Expenses	\$ 55,000.00
Depreciation	2,000.00
Councils and Committees:	
Public Policy	\$3,600.00
Insurance	500.00
Professional Education	2,400.00
Socio-Economic Activities	500.00
Public Health	500.00
	7,500.00
In-State Travel	1,000.00
Out-Of-State Travel	6,000.00
Annual Meeting:	
Guest Speakers	\$2,200.00
Hotel	1,200.00
Decorations	1,200.00
Dinner, Luncheons	2,600.00
Entertainment	1,600.00
Printing, Promotion	1,000.00
Miscellaneous	1,000.00
	\$ 10,800.00
Scholarships and Loans	8,500.00
TOTAL EXPENSE	\$ 90,800.00
NET SURPLUS	\$ 3,589.00

BUDGET B—JOURNAL, MEMBERSHIP DIRECTORY

INCOME

Journal

National Advertising	\$24,500.00
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Direct Advertising	8,500.00	
Subscriptions	300.00	
		\$ 33,300.00
<i>Membership Directory</i>		
Advertising	\$1,000.00	
Sale of Copies	400.00	
		1,400.00
TOTAL INCOME		\$ 34,700.00
<i>EXPENSE</i>		
<i>Journal</i>		
Printing	\$23,000.00	
Engraving	850.00	
Art	450.00	
Salaries	8,100.00	
Travel, Dues	350.00	
Miscellaneous	400.00	
		33,150.00
<i>Membership Directory</i>		
Printing, Mailing		1,500.00
TOTAL EXPENSE		\$ 34,650.00
NET SURPLUS		\$ 50.00

Report of
COUNCIL ON PUBLIC HEALTH

Council Members

Paul D. Erwin, M.D., Chairman
J. Walker Morledge, M.D.
William K. Ishmael, M.D.
George H. Guthrey, M.D.
Hayden H. Donahue, M.D.
Don H. O'Donoghue, M.D.
Gifford H. Henry, M.D.
Lynn H. Harrison, M.D.
Charles E. Green, M.D.
John W. Records, M.D.

The Council on Public Health is comprised of the following committees:

Safety: Lynn H. Harrison, M.D., Chairman

Disaster Medical Care: Gifford H. Henry, M.D., Chairman

Highschool Athletic Injuries: Don H. O'Donoghue, M.D., Chairman

Perinatal Mortality: John W. Records, M.D., Chairman

Rehabilitation: William K. Ishmael, M.D., Chairman

School Health: Charles E. Green, M.D., Chairman

Mental Health: George H. Guthrey, M.D., Chairman

SECTION I
SPECIAL COUNCIL ACTIVITIES

A. *Polio Immunization*: As a public service project and as part of a general immunization education campaign, the Council distributed "How-to-do-it" Kits to all county medical societies for their use in conducting county or area-wide polio immunization programs. To date, county medical societies throughout the state have been involved directly or indirectly in immunizing well over a million Oklahomans against the disease, simply by sponsoring Sabin oral vaccine clinics.

Recommendations: The Council recommends and encourages the continuation of county medical society sponsorship of polio immunization clinics, both as a public service project and for the public relations value it lends the medical profession. In an effort to attain 100 per cent participation the Council urges county

medical societies who have not sponsored polio clinics to do so.

B. *Immunization Education*: Pursuant to Resolution No. 21, approved at the 1962 OSMA Annual Meeting, the Council cooperated with the Council on Public Policy in planning and conducting "Health Protection Week," a statewide immunization education campaign, beginning on April 8 and ending April 14.

The purpose for the immunization education project was to improve the level of immunization in Oklahoma for tetanus, whooping cough, diphtheria, smallpox and poliomyelitis. The theme used in promoting the program focused attention on the family physician and the need for Oklahomans to see him about bringing vaccinations up to date.

A large number of county medical societies cooperated by contacting area newspapers, requesting use of ad mats, news releases and editorial comments. Moreover, county societies distributed waiting room posters to each member physician as well as

"Personal Health Record Cards" and to some extent, statement stuffers.

The OSMA executive office distributed prepared slides, filmstrips and supporting announcements to all Oklahoma television stations. State radio stations were supplied with prepared spot announcements for their continuous use during the project week.

TV and radio media gave excellent public service cooperation to "Health Protection Week."

Recommendations: Because of mixed response from county medical societies, the Council makes no recommendations regarding the repetition of such an activity. Instead, the Council solicits the instruction of the House of Delegates in this regard.

SECTION II

Safety Committee: The Committee is pleased to report its activities in four project areas: (1) The committee condemned poor, low quality glass being installed and used in sliding glass doors in residential construction throughout Oklahoma; (2) the committee worked with the State Department of Public Safety in supporting a legislative bill which would create a Medical Advisory Committee to assist the Driver's Licensure Division of the Department of Public Safety; (3) the Safety Committee has alerted the public and automobile seat belt manufacturers that the OSMA and its membership endorse and strongly urge installation and use of seat belts. Moreover, county medical societies were furnished kits and encouraged to conduct seat belt campaigns; and (4) the committee has gathered information for a number of articles which will appear in a future issue of the *OSMA Journal*, solely devoted to *Safety*.

SECTION III

Disaster Medical Care Committee: The OSMA last year assumed leadership in inaugurating the Medical Self-Help Training Courses, which have been carried out very successfully this year throughout the entire state.

Under the guidance of Oklahoma Civil Defense, the State Department of Health and this committee, and

with the approval of the local county medical society, these courses were taught. To date, it is estimated that well over 2,000 students have completed the Self-Help Training Course in Oklahoma.

In the area of Hospital Disaster Planning, the committee approved the selection of sites for the location of seven additional 200-bed emergency hospitals. The additional approved sites were: Chickasha, Antlers, Hugo, Tonkawa, Mangum, Tahlequah, and McAlester.

SECTION IV

Perinatal Mortality Committee: The Perinatal Mortality Committee of the Oklahoma State Medical Association was reactivated on March 28, 1962. The Committee has made available a perinatal educational program for the physicians of Oklahoma. The availability of case material and talent for these programs was announced to the state medical association, the Academy of Pediatrics and the Academy of Gynecology and Obstetrics. To date, four programs concerning perinatal mortality and morbidity have been conducted.

This committee has endorsed and is encouraging the passage of legislation to protect individual participants in studies for the purpose of reducing mortality and morbidity, and for the advancement of medical research and education.

Subsequent to the advice of this committee, the Oklahoma State Board of Health, in June 1962, approved the use of Sodium Sulfacetamide, ointment or solution, ten per cent strength to be applied to the eyes of the newborn child at birth, in lieu of a one per cent solution of silver nitrate.

The committee plans to make available to the physicians of Oklahoma information concerning the need for obstetrical and newborn forms and the value to be derived from the utilization of these forms.

The Perinatal Case Conference Program is to be continued; publicity concerning availability for these conferences will again be sent to the physicians of Oklahoma. The committee plans to submit to the *OSMA Journal* an editorial concerning peri-

natal problems and the availability of these conferences. The committee also plans to seek other sources for encouraging perinatal educational programs in Oklahoma.

SECTION V

Mental Health Committee: The Mental Health Committee has the following recommendations to make to the Oklahoma State Medical Association.

1. Requests support and approval of the present system for selecting a qualified doctor of medicine as Director of the State Department of Mental Health and Retardation as well as selecting qualified doctors of medicine as superintendents of state mental health institutions.

2. Review of mental health laws giving consideration of medical certification for admission at state institutions rather than the prevalent court procedures which are not always in the best interest of the patient.

3. Review of the law relative to the release and exchange of privileged communications and patient's case records in order to facilitate and improve patient care.

4. Consideration of the laws in order to clarify the competency status of patients regarding the exercise of their civil rights.

5. That the organization of a State Congress on Mental Health and Illness be planned along the lines of the structure of the AMA's Congress held last Fall.

6. Encourage county medical societies to present at least one program a year on Mental Health.

7. Encourage OSMA sponsorship of seminars and workshops at the request of practicing physicians in the various communities as well as establish Mental Health Committees in as many county societies as possible.

8. Encourage local societies to hold a meeting within a mental institution in their area.

9. Permission to develop a Directory for Mental Health Services in Oklahoma; financial details to be worked out at a later date.

10. Encourage up-grading the pay scales of all professional and non-

professional employees in mental institutions and schools of retardation to attract higher quality personnel.

11. Encourage the expansion of existing training facilities for the professional workers in hospitals and to establish after-care facilities which include out-patient services and also to establish day hospitals where day care can be provided, particularly in heavily populated areas, not close to a mental institution.

12. Encourage the establishment of a hospital center for treatment of emotionally ill children as well as special facilities to provide treatment to alcoholics and drug addicts.

13. Encourage the establishment of a diagnostic center for the diagnosis and treatment of the criminally insane. This feature can best be accomplished through providing a psychiatric center at the State Penitentiary in McAlester.

SECTION VI

School Health Committee: Rural School Health Survey, Comanche-Cotton Counties, April, 1963. During the month of April, 1963, the rural school children of Comanche-Cotton Counties were given the opportunity to participate in the rural school health survey conducted by the Comanche County Health Department and members of the Comanche-Cotton County Medical Society. Eighty-three per cent of Comanche County and eighty per cent of the Cotton County rural students participated in the survey.

The extent of the physical examination handled by the doctors included the following: Check of the eyes, ears, nose, throat, heart, and also blood pressures were done on all students from Grades 9 through 12. Special emphasis was placed on observation of dental cavities, enlarged tonsils and heart murmurs. Also included was a survey of the student's immunization records as they were encouraged to keep their level of immunization up to date. Consultation was given to students who had weight, skin or other problems.

Of the 2,238 students examined in Comanche County, the survey revealed: 567 children had dental cavities, 97 had enlarged tonsils, and 127

had heart murmurs or other heart defects.

In Cotton County, 723 students, ranging from Grades 1 through 12 were examined. The examinations revealed: 55 had dental cavities, 14 had enlarged tonsils, and 11 cases of heart abnormalities were uncovered.

All positive findings were sent to the family physician for further evaluation.

Report of COUNCIL ON SOCIO-ECONOMIC ACTIVITIES

Council Members

Wilkie D. Hoover, M.D., Chairman
Kenneth L. Wright, Jr., M.D.
Frank J. Nelson, M.D.
A. T. Baker, M.D.
Kieffer Davis, M.D.

SECTION I.

PREPAID MEDICAL CARE COMMITTEE

The committee met on three occasions during the year, and wishes to report the following items to the House of Delegates:

A. *Nominations to Blue Cross Board:* Two positions were open on the Blue Cross Board, and the committee was afforded the opportunity of making nominations. Appointment of physicians from the OSMA nominees has not been accomplished as of this date.

B. *Nominations to Blue Shield Board:* Three positions were open on the Blue Shield Board. Joe L. Duer, M.D., and Ralph A. McGill, M.D., were reappointed upon the committee's recommendation, while Jack A. Foertsch, M.D., replaced Frank H. Austin, M.D., who declined reappointment.

C. *Health Insurance Trust Fund:* The committee has met on several occasions with representatives of Oklahoma insurance companies to discuss the creation of a "Health Insurance Trust Fund." Such a fund would permit the companies to pool the risk on a low-cost major medical health insurance program for the aged. Specifically, the plan would pay 80 per cent of health care costs up to \$10,000 after a \$250 deductible. State legislation would be required before the trust fund could be created

by domestic insurance companies.

At the present time, local insurance companies are deferring action on this project, pending receipt of experience tables from the pioneer "Connecticut-65" plan.

The committee's activity in this area has been approved in principle by the OSMA Board of Trustees.

D. *Liaison Between Doctors, Hospitals, Insurance Companies:* The committee has had several meetings with representatives of the Oklahoma Association of Health and Accident Insurers, the Health Insurance Council, and the Oklahoma Hospital Association. It was the purpose of these meetings to study the propriety of creating a liaison committee to promote better understanding and cooperation on problems of mutual interest.

In other states where such liaison groups exist, such as Texas, the joint committee attempts to adjudicate misunderstandings, bilaterally, between the insurance companies and the providers of health care—physicians and hospitals. Moreover, the liaison groups are reported to serve as an educational forum to generally improve the mechanism of health insurance.

Recommendations of such liaison groups are not binding upon any of the cooperating agencies.

E. *Recommendations:*

1. The committee requests House of Delegates' approval of the principle of establishing a Health Insurance Trust Fund in Oklahoma for the purpose of providing low-cost major medical insurance to the elderly. (This represents a request to have the power to negotiate. The final decision on such a project would rest with the House or the Board of Trustees.)

2. The committee seeks House of Delegates approval for the continuation of negotiations to establish a liaison committee between doctors, hospitals and insurance companies. Here again, such a group would only be established upon approval of the House or Board of Trustees, based upon rules and regulations to be promulgated by the Prepaid Medical Care Committee.

SECTION II.

PUBLIC WELFARE COMMITTEE

Four meetings of the group during the past year have resulted in the following report to the House of Delegates:

A. General:

1. On September 18, the eligibility criteria for the Medical Assistance for the Aged Program were liberalized upon the recommendation of Senator Robert S. Kerr, who pointed out that only 4,200 cases had been approved in two years. Permissible annual income levels were raised from \$1,500 to \$2,000 for a single person, and from \$2,000 to \$3,000 for a couple. The House of Delegates approved the changes on September 16th.

2. In another action the Public Welfare Committee prevailed upon the Department of Public Welfare to use the *current* (1960) fee schedule for the Dependents Medical Care Program (Medicare). While the fee changes were rather insignificant, they represented an improvement over the 1957 fee schedule which was being used.

3. The committee recommended to the Department of Public Welfare that the examination fee be changed for determining eligibility for care in home and nursing home care. It was recommended, and subsequently adopted, that the examination fee be \$10 where the examining physician is not the regular attending physician, and \$5 in cases where the attending physician makes the examination.

4. Regarding *special* examinations to determine welfare eligibility, the committee recommended that non-professional employees of the Department of Public Welfare should not be authorized to request such examinations; that such examinations should be requested by medical authorities and the type of examination requested should be clearly described. This problem has been reported as corrected.

5. The committee reports that a physician was appointed to the Public Welfare Commission by former

Governor J. Howard Edmondson. Leon C. Gilbert, M.D., Bethany, has been invited to attend meetings of the OSMA Public Welfare Committee.

B. Utilization:

1. For several months, the Public Welfare Committee has been the recipient of allegations that the health care programs of the Department of Public Welfare are being abused through over-utilization; i.e., unnecessary hospitalization, unjustified length of stay, and excessive rates of re-admission.

Since the allegations were non-specific, the committee attempted to identify areas of abuse through a study of hospital utilization records as compared to respective over-65 population ratios. This effort, which appeared to substantiate the allegations, was ruled inconclusive by the Department of Public Welfare, yet we encountered great difficulty in obtaining specific information due to federal regulations which prevented the general release of privileged information from the files of this department.

However, based upon the belief that there were, in fact, isolated areas of misunderstanding as to the philosophy and regulations governing the utilization of the programs, the committee wrote each county medical society and re-stated the "Life-in-Danger" admission policy. In addition, physicians were cautioned that it was not the intent of the program that physicians routinely make two visits per month to residents of nursing homes; that such visits should be made by attending physicians to individual patients based upon individual circumstances of need.

At a later date, the Department of Public Welfare found it possible to reveal a hospital utilization study to the committee. The study contained a list of 28 hospitals which show welfare patient utilization of hospital beds ranging from 50 per cent to as high as 78 per cent. Moreover, the same list of hospitals indicates a re-admission rate on welfare patients ranging from 22 per cent to 92 per cent, with an average

re-admission rate of 63.1 per cent. (A copy of this hospitalization study will be mailed to each county medical society in the near future.)

On March 30, 1963, pursuant to authorization by the Director of the Department of Public Welfare, the OSMA Committee agreed to furnish its membership as consultants to the department for the purpose of visiting problem areas and discussing utilization with physicians who may be involved. By serving as consultants, the committee members will have official sanction and access to all information in the department's files.

It is the feeling of the committee that the profession has a responsibility to govern the activities of members whose actions may reflect discredit upon the profession as a whole. At the same time, the committee has a responsibility to protect physicians against false accusations; and can only do so if thorough investigations of complaints are made.

The attitude of the committee in this regard is consistent with established policy of the association to voluntarily be responsible for the conduct of its members.

C. *Economy*: The Department of Public Welfare has advised your committee that it will be necessary to curtail expenditures to the health care vendors after July 1, 1963. This situation has apparently been brought about by the legislature's demands upon Public Welfare funds to finance other agencies of state government, plus the proposal to increase monthly subsistence grants to welfare recipients.

All health care vendors—doctors, hospitals, nursing homes, etc.—have been asked to submit recommendations before July 1st as to how economies can be effected. There is to be no cutback, however, in the health care benefits to be offered to welfare recipients.

D. Recommendations:

1. Regarding alleged abuse of the welfare health care programs, the committee requests approval of the House of Delegates to establish the Public Welfare Committee as a per-

manent group of consultants to the Department of Public Welfare.

2. The Public Welfare Committee recommends that the Oklahoma State Medical Association *stand against* a fluctuating fee schedule for professional services rendered to recipients of public welfare.

3. In relation to the preceding recommendation and the apparent shortage of welfare funds to meet the financial obligations of the Department of Public Welfare, the committee further recommends that direct premium payments be made to a single agency, such as Blue Cross-Blue Shield or another competent insurance organization, for the purpose of providing the same benefits now available to recipients of welfare medical care, with the proviso that such an insurance organization must provide these services at a cost of *less than \$18.05*, per month, per person. Any insurance agreement between the Department of Public Welfare and an insurance carrier would be subject to annual renegotiation, and the vendors of health care services must be assured of the right to participate in the negotiations.

Note: This arrangement would take physicians' fees out of the political arena. Moreover, the committee feels it would result in a savings to the taxpayers of the state and, in addition, would preserve the dignity of the indigent elderly by providing them with an individual policy which clearly sets forth the benefits to which entitled.

4. Contingent upon House of Delegates' approval of Recommendation No. 3, the committee requests authority to negotiate the proposal contained therein, and to seek the implementation of this project upon approval of the House of Delegates.

5. In an effort to more clearly define the welfare hospital admission policy, the committee recommends that the policy be stated as follows (Proposed changes underlined):

"A life-endangering illness is that illness for which *actual hospital confinement and treatment* is a definite requirement, and for which outpa-

tient care will not suffice, or for which lack of hospitalization, in the judgment of the recipient's attending physician, would result in a reasonable chance of placing the recipient's life in jeopardy."

Report of COUNCIL ON PROFESSIONAL EDUCATION

Council Members

R. R. Hannas, M.D., Chairman
Irwin H. Brown, M.D.
Wendell L. Smith, M.D.
Clinton Gallaher, M.D.

The Council on Professional Education is comprised of the following committees:

Postgraduate Education: R. R. Hannas, M.D., Sentinel, Chairman

Medical School Liaison: Wendell L. Smith, M.D., Tulsa, Chairman

American Medical Education and Research Foundation: John R. Taylor, M.D., Kingfisher, Chairman

Financial Aid to Education: Clinton Gallaher, M.D., Shawnee, Chairman

The committees report the following:

I. *Postgraduate Education Committee.*

A. Eight Regional Postgraduate Courses have been held on four topics, the Pancreas, Heart, Liver and Central Nervous System. The courses were presented at Ponca City, McAlester, Lawton, Shawnee, Woodward, Lake Texhoma, Burns Flat and Stillwater. Acceptance of the courses this year, the third year of their presentation, suggests that they should be continued.

B. A series of television programs on the two Educational Television Channels is being presented now each Thursday evening at 9:45. By this medium, it is possible to reach the largest number of state physicians on any given subject at one time. Programs adjudged as the best of this series will be used to exchange for programs made in other states which have similar courses.

C. Plans for the future include the attempted development of individual residency programs for physicians wishing to refresh themselves in a particular subject during time available to the individual—whether it might be one day, a week, or several

days or weeks at a time.

II. *Medical School Liaison Committee.*

A. The untimely death of Doctor Gregory Stanbro, who began the year as Chairman of this committee and who contributed so much to its successful operation in previous years, was a loss which we will feel for some time to come. Some of the fruits of the successful work of this committee are being realized already in the tremendous increase in quantity and quality of the applicants for admission to our state medical school.

B. This committee, now under the Chairmanship of Doctor Wendell L. Smith, has been in contact throughout the year with the Medical School on problems of mutual interest.

III. *AMAERF Committee.*

A. Doctor John R. Taylor, Chairman, and the Woman's Auxiliary have continued to raise our contributions to this fund, but we still receive more than we give.

IV. *Financial Aid to Education Committee.*

A. This committee will report its activities separately.

Recommendations

1. That the Regional Postgraduate Courses be continued and that the sum of \$1200 be allotted to be used as necessary in financing these courses.

2. That the Educational Television Programs be continued next year and that the sum of \$1200 be allotted to be used as necessary in financing these programs.

Report of COUNCIL ON PUBLIC POLICY Council Members

Rex E. Kenyon, M.D., Chairman
R. Q. Goodwin, M.D.
John E. McDonald, M.D.
M. H. Newman, M.D.
Elmer Ridgeway, Jr., M.D.
Thomas C. Points, M.D.
M. E. Robberson, M.D.
Worth M. Gross, M.D.
Bob J. Rutledge, M.D.

The Council is comprised of the following committees:

Federal Legislative Committee:

Worth M. Gross, M.D., Chairman
State Legislative Committee:

Elmer R. Ridgeway, Jr., M.D.,
Chairman

In a broad sense, the Council on Public Policy is charged with a dual responsibility—that of public relations and legislative activity. It becomes readily apparent that both of these activities find their most fertile ground for accomplishment at the county level—indeed with the individual; so the council's task becomes one largely of stimulation and direction.

It was recognition of this need for local activity that prompted our sponsorship of the first annual county officers' conference, which was held in Oklahoma City in October. The conference was designed not only to stimulate local interest in public relations and legislative activities, but also to demonstrate techniques for accomplishing same. A group of outstanding speakers was assembled, and at the risk of being immodest, I must tell you that this was a very fine conference. Regrettably, it was attended by representatives of only 25 per cent of county societies.

SECTION I.

Federal Legislative Activities: At this October meeting our "crash" program for legislative action was introduced. This plan called for local organization of specific individuals and committees to handle letter writing, public speaking, preparation of resolutions and editorials, news releases, and auxiliary liaison. It was a comprehensive and ambitious program. Following its introduction at this meeting, follow-up letters were sent to county society presidents with detailed instructions. Regrettably, a response was received from only 60 per cent of county society organizations. Fortunately, we were not called upon to use our somewhat crippled crash program; since our arch enemy, the King-Anderson legislation, is not scheduled for hearings until late June or early July. This postponement has reduced our federal legislative activities to a posi-

tion of watchful waiting. In this regard, representatives of this council have kept in close touch with AMA's Washington Office, and with elected representatives; so that we might be informed on federal legislation which was related to the practice of medicine. Thus far, the course has been a fairly benign one.

In an attempt to foster greater understanding of medicine's position on the King-Anderson legislation, this council, in cooperation with the Oklahoma County Medical Society, sponsored a Town Hall Meeting featuring Doctor Edward R. Annis, on Tuesday, April 23, 1963, in Oklahoma City's Municipal Auditorium. Emphasis was placed toward procurement of a large non-medical audience. Personal appeals were made to physicians to bring their lay associates, through the medium of letters, telegrams, and published announcements in the county and state journals. Practically every major civic, professional, and community organization was contacted directly. Newspaper, television, and radio announcements heralded the meeting. We were rewarded with an audience of approximately 2,000 people, who came away with new understanding on the issues.

A legislative tour to Washington is planned for mid-June, immediately preceding the AMA's meeting in Atlantic City. Representatives of this association will meet formally and socially with our Congressional delegation. No association funds are being used to meet the personal expenses of our volunteer travelers; and each of you is invited to join this entourage at his own expense.

SECTION II.

State Legislative Activities: More activity has been required of our State Legislative Committee, and their study and action on several measures has produced some highly favorable results—much more so than the uninformed might suspect from reading the newspapers. I say this because I have heard statements suggesting inactivity on the part of this committee. I would categorically deny these allegations. In order to gain certain objectives, compro-

mise has been indicated. But it is an irrefutable fact that compromise is the most important activity of the legislative arena. This committee placed emphasis on four major pieces of state legislation: 1) The revisions of the Public Health Code. 2) The Nurse Practice Act. 3) The Mental Health Bill. 4) The Medical Examiners Bill.

SECTION III.

Public Relations: In this field our sole objective has been to improve the image of the physician, through added community service, particularly in the activities of public health and medicine. Our state associations health column has been published for ten weeks. Through its appearance in an average of 44 newspapers per week, our column, "A Message From Your Doctor" has been exposed to over 900,000 readers.

The council cooperated with the Council on Public Health in the mass media promotion of "Health Protection Week." While the necessary county society cooperation was weak in some areas, we were generally gratified with the public goodwill obtained through the combined publicity efforts of the state association and the county societies. We were very successful in getting extensive use of our television and radio spot announcements, as well as our newspaper advertising and news releases.

County societies were again asked to participate in our public relations program through public speaking, public information presentations, science fairs, local community projects, immunization programs, polio campaigns, et cetera. Many counties responded nobly, both as groups and as individuals. Polio campaigns in particular were highly successful; and the prestige of the profession, as reflected by the barometers of press attitude and personal comment, has unquestionably been favorable. Participation by county groups has fallen short of expectations; and I would not even speculate on the light that might have been created if each of us had lighted the proverbial "one little candle."

In spite of it all, however, I feel

the year has been a highly successful one from the standpoint of results; and I would here acknowledge with high praise and deep gratitude the fine efforts of council and committee members, of county officers and individual physicians who served this council and their profession unselfishly and well. I would further acknowledge, with an equal measure of thanks, the confidence in and assistance to this council offered by Doctor Carlock, the Executive Committee, and the Trustees.

SECTION IV.

Recommendations: Our recommendations are brief. Last Fall, the Board of Trustees granted an additional \$10,000 for our budget, to be taken from association reserves as dictated by need. We have guarded our funds selfishly, and we have overdrawn our budget less than \$1,000, with none of the special allocation used to date. Our total program has cost \$3,500, and we are proud to have accomplished what we have for so little. But, gentlemen, public relations cost money. We need the assistance of professional consultants in this field. Newspaper space, radio and television time are expensive. We have been able to save many dollars through a do-it-yourself program; but this council cannot continue to monopolize the time of this association's executive secretary—and we have done just that! Every industry has recognized the tremendous value of its public relations dollars; and medicine must learn these image-building techniques from industry.

Moreover, we are entering upon the most active phase of our federal legislative program within two months. If we are to accomplish the techniques of public education and information, only through which can our position be successfully defended, we must have adequate funds available. The present budget allocation, even including the generous additional amount given last Fall, is simply not adequate to meet the needs for successful programming. This council, therefore, recommends a ten dollar a year dues increase for members of the Oklahoma State

Medical Association, the additional funds to be used for increased public relations and legislative activity.

And, our second recommendation: As we need money, so we need workers. The AMA's "Operation Hometown," a crash program not unlike our own legislative action plan, will soon be introduced by your new public policy council. There is a job for each of Oklahoma's 2,000 physicians, if we are to preserve the free enterprise system of medicine in this country. You, gentlemen, as the leaders, have the added responsibility of stimulating that personal action; and we do most sincerely urge you to do so.

Report of FINANCIAL AID TO EDUCATION COMMITTEE

The membership of the committee during the preceding organizational year was comprised of: Clinton Galaher, M.D., Chairman; Alfred T. Baker, M.D.; Walter E. Brown, M.D.; J. Hoyle Carlock, M.D.; and Peter E. Russo, M.D.

The committee met on two occasions for the purposes of selecting scholarship winners for the freshman class entering the University of Oklahoma School of Medicine in September, 1963, and for the selection of loan recipients for the academic year 1962-63. In addition, pursuant to the previous committee's action, five 1962 freshmen received \$500 scholarship checks from Walter E. Brown, M.D. at ceremonies held in the school's main auditorium last September.

1963 Scholarships

In accordance with the directive of the House of Delegates, the committee used standards of academic achievement as criteria for selecting OSMA Scholars from among those accepted into the freshman class of 1963. Forty-eight applicants for scholarships were measured by the same set of standards, and the following have been named to receive \$500 scholarship checks next September, upon matriculation to the School of Medicine:

Gene C. Cunningham,
Oklahoma City, Oklahoma
Johnny H. Jones, Jr.,

Shawnee, Oklahoma
Robert B. Livingston,
Oklahoma City, Oklahoma
William W. Wallace,
Ardmore, Oklahoma
Don A. Wilson,
Blackwell, Oklahoma

Loans

For the academic year of 1962-63, the committee has approved nineteen loan applications. At this reporting, seven students have executed promissory notes and have received their checks, ten loans are in process, and two students have cancelled their applications.

Financial Statement

The \$5 dues increase to finance the OSMA Scholarship and Loan Program became effective in January, 1962. A total of \$8,433.74 was collected and transferred to the business administrator of the University of Oklahoma Medical Center, who was stipulated as depository for the funds in accordance with the OSMA-O.U. agreement. The initial deposit designated that \$2,500 was to be used for scholarships in 1962, \$5,000 was to be available for loans during the 1962-63 academic year, and \$933.74 was earmarked for grants-in-aid.

On April 25, 1963, the business administrator certified the following receipts and disbursements:

Scholarships	-----	\$ 2,500.00
William H. Smith, II	\$500.00	
John F. Schumacher	500.00	
Muriel E. McGlanery	500.00	
Edward Gwin, IV	500.00	
John A. Junker	500.00	2,500.00
Balance for 1962-63 Year	—0—	
Loans	-----	\$ 5,000.00
7 Checks issued @		
\$250.00 ea.		\$ 1,750.00
10 Loans		
in process	2,750.00	4,500.00
Balance for 1962-63 Year	500.00	
Grants-In-Aid	-----	\$ 933.74
(No Applications)		—0—
Balance for 1962-63 Year	\$	933.74

Scholarship and loan funds from 1963 dues are now being collected and will be transferred to the medical center depository account on August 15, 1963. From these funds, the 1963 scholarships in the total amount of \$2,500 will be paid, and the loan and grants-in-aid budgets

will be enhanced by about \$5,000 and \$1,000, respectively.

Report of
COUNCIL ON INSURANCE
Council Members

R. Q. Goodwin, M.D., Chairman
William R. Cheatwood, M.D.
E. C. Mohler, M.D.
William S. Dandridge, M.D.
Dave B. Lhevine, M.D.

The Council is comprised of the following committees:

Group Insurance Committee:

E. C. Mohler, M.D., Chairman

Professional Liability Committee:

Dave B. Lhevine, M.D., Chairman

SECTION I.

GROUP INSURANCE COMMITTEE

The association presently has group insurance programs for life insurance, disability income insurance, and overhead expense insurance. In addition, the association maintains a retirement program for its employees. Reports on these programs are presented below:

A. *Term Life Insurance:* Underwritten by the Massachusetts Mutual Life Insurance Company since 1956, the program offers up to \$20,000 in term life insurance to OSMA members. There are 417 physicians insured under the program at the present time in the aggregate amount of \$6,842,500. Nearly \$500,000 has been paid in claims since the inception of the program.

Based upon 1962 experience, a 5 per cent reduction in premium was offered to policy holders on April 1, 1963, anniversary date of the group plan. This is the second straight year for a premium reduction.

During 1963, there were six death claims totaling \$100,000 paid to beneficiaries of OSMA members. Since the annual premium income amounts to \$85,000 it is unlikely that a premium reduction can again be offered in 1964, although such is possible if we have favorable claims experience during the next twelve months.

Despite higher losses this year, the term life insurance program is sound, and we are assured of greater dividends in the future as partici-

pation improves and younger doctors are brought into the program.

B. *Disability Income Insurance:* Over 800 OSMA members participate in the group disability income program written by the Insurance Company of North America. Approximately \$70,000 in claims has been paid during the two year period that we have been protected by INA.

At the present time, the options of the plan offer from \$200 to \$600 monthly indemnity against the loss of income resulting from sickness or accident. Variable waiting periods are also offered. Physicians may select the term of protection against illness—either three or five years—and life-time accident benefits are built into every policy. The non-cancellable policy contains a \$5,000 death and dismemberment benefit, and an optional \$15.00 a day hospital benefit is offered for a period of 120 days.

While the present program successfully competes with disability income plans sold through other medical organizations, the favorable experience record under the Insurance Company of North America assures us that we will soon be able to offer even more extensive coverage at less cost than competing plans. The Group Insurance Committee and the association's agent, C. L. Frates and Company, will begin negotiating for a liberalization in the program in the early Summer.

C. *Overhead Expense Insurance:* Designed to protect the doctor against the expense of keeping his office open during periods of disability due to sickness or accident, this program provides up to \$1,000 monthly benefits for as long as 18 months. Nearly 200 doctors are insured through the program written by Continental Casualty.

D. *Employees Retirement Program:* The association presently contributes to a retirement income program for employees who have tenure exceeding two years. Employees also share the cost of the premium through payroll deductions.

The Group Insurance Committee believes that the retirement program is inadequate in terms of the present and anticipated costs of living. Un-

der the program in existence now, the maximum retirement benefit is \$215.00 per month. It was the committee's opinion that monthly benefits should be stated as a percentage of income rather than a fixed amount, thus keeping the retirement benefits abreast of inflation.

The agent for John Hancock Mutual Insurance Company was asked to prepare several alternate proposals and submit them to the committee. After reviewing these proposals, the committee recommended a proposal calling for a monthly retirement benefit based upon 45 per cent of monthly income, and for a 10 year vesting clause.

The total annual premium for the covered employees is quoted at \$3,559.54. Less employees' contributions and average annual dividends, the average annual net cost to the association would be \$1,298.15.

The Group Insurance Committee herewith recommends the implementation of this program.

SECTION II.

PROFESSIONAL LIABILITY
COMMITTEE

Since 1952, the association has cooperated with the St. Paul Insurance Companies in offering a professional liability insurance program to the membership. There are now 1,436 OSMA members protected by St. Paul, representing over 80 per cent of the active membership.

The Professional Liability Insurance Committee was contacted early in the Fall by the company, and at a September 19th meeting with company representatives we were informed that a 26 per cent across-the-board rate increase was requested.

This request was based upon the company's belief that an unfavorable loss ratio would make it unprofitable to write the coverage at current rates. It was reported to the committee that the overall loss ratio for a ten year period amounted to 64.8 per cent, and it was pointed out that a 51 per cent loss ratio was considered the breakeven point. Moreover, for the years 1959-1962, the loss ratio has been 76.7 per cent.

Through a series of three meetings with the company, your committee

argued against the rate increase, pointing out that the 1962 loss ratio of 49.5 per cent indicated a favorable trend. Our negotiations were successful in that a compromise was finally agreed upon and later (March 10, 1963) approved by the Board of Trustees. Here is a summary of the terms of agreement:

1. A 20 per cent rate increase was agreed upon for all counties except Tulsa County (The committee's negotiations resulted in cutting about \$30,000 from the rate increase proposed by the company).

2. Tulsa County rates, elevated above the rest of the state in 1960, were to be equalized with the balance of the state. Further, the policy of uprating an individual county was rescinded, in the belief that the association must stand together to preserve the unity and stability of the program.

3. The company agreed to improve communications with the association through periodic progress reports of its claims experience, in order to afford the association advance warning of trouble in time to take corrective steps.

4. The company agreed to accelerate its efforts in the area of educational programs and claims prevention.

After receipt of Board of Trustees approval, the company filed for the rate increases with the Oklahoma State Insurance Department. At this time, an unanticipated action by the National Bureau of Casualty Underwriters complicated the OSMA-St. Paul program.

Whereas St. Paul had been using *two* classifications to set rates — "physicians" and "surgeons" — the national group announced a further refinement, based upon experience statistics, which would create a rating system involving *four* classes of physicians. These rating classifications are:

(A) *Physicians*—no surgery (other than incision of boils, suturing of skin) or obstetrical procedures.

(B) *Physicians*—minor surgery or obstetrical procedures not constituting major surgery.

(C) *Surgeons* — performing major

surgery, proctologists, anesthesiologists and ophthalmologists.

(D) *Surgeon-Specialists* — cardiac surgeons, urologists, neurosurgeons, obstetricians, gynecologists, orthopedists, otolaryngologists, plastic surgeons, general surgeons, thoracic and vascular surgeons.

In view of the national bureau's new rating system, which will directly influence the rating structure throughout the industry, St. Paul believes it must conform or suffer a competitive disadvantage. For example, Class (A) physicians will pay less premium under the bureau plan than will "physicians" under the St. Paul plan, and Class (C) surgeons will have the same advantage over St. Paul's "surgeons." However, Class (B) physicians will be uprated under the bureau plan as will Class (D) surgeons.

Thus, if St. Paul does not conform to the new system, the net result will be that they will lose the coverage of Classes (A and (C)—the lower risk groups—and will attract more policyholders in the higher risk Classes (B) and (D).

The St. Paul Insurance Companies have therefore requested that the association program be converted to the new system, coupled to the previously approved 20 per cent rate increase. Such action will place St. Paul in a competitive position with bureau companies since St. Paul rates will be lower in all four classifications despite the 20 per cent rate increase.

The 20 per cent premium increase approved by the OSMA Board of Trustees last March will be reflected by approximately the same dollar amount under the new system. However, under the new system, it must be pointed out again that the distribution of the premium increase will weigh more heavily upon Class (B) and (D) doctors, in accordance with the higher risks involved.

In view of the fact that the overall premium increase will be the same under the new plan as under the present program, and keeping in mind that St. Paul must remain competitive with other companies in the field, the Professional Liability In-

surance Committee herewith requests House of Delegates approval of the new rating system as well as the 20 per cent rate increase.

RESOLUTIONS

Resolution No. 1

(APPROVED)

Ruled similar in intent to Resolutions No. 5, 15, 22, and 29.

Introduced By: Comanche-Cotton County Medical Society

Subject: OSMA Endorsement of AMPAC and OMPAC

Referred To: Legislation and Public Policy Committee

WHEREAS, in view of the ever increasing political pressures on the part of our governments, both federal and state, directed toward establishing progressively more central control and limitations of free enterprise (and in particular, American Medicine);

THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association does hereby endorse and approve the Oklahoma Medical Political Action Committee and its purposes; and

BE IT FURTHER RESOLVED, that the Oklahoma State Medical Association does hereby endorse and approve the American Medical Political Action Committee and urge all physicians of this state to join, support, and contribute to the success of AMPAC and its objectives; and

BE IT FURTHER RESOLVED, that the Oklahoma State Medical Association does hereby urge all of its members to actively participate and contribute to these organizations in order to promote the political aims and objectives of the physicians of this state for the greater benefit of medicine and the betterment of the public health of all its citizens.

Resolution No. 2

(APPROVED AS AMENDED)

Introduced By: Carter-Love-Marshall County Medical Society

Subject: Mental Health in the State of Oklahoma

Referred To: Miscellaneous Business Committee

WHEREAS, it is well recognized: (1) That problems in mental health

embrace conditions ranging from behavior problems in children through alcoholism, the psychoses, and the senile dementiae of the aged. (2) That the problems in mental health are common to the vast majority of all communities. (3) That problems in mental health arise in large segments of the population of the State of Oklahoma. (4) That many problems in mental health can be prevented, alleviated or treated by attention at community level; and

WHEREAS, the members of the Carter-Love-Marshall County Medical Society, as members of the medical profession recognize these problems to be of taunt-amount public importance.

NOW, THEREFORE, BE IT RESOLVED, that the Carter-Love-Marshall County Medical Society go on record and urge the House of Delegates of the Oklahoma State Medical Association to go on record, approve and offer their full and unqualified support of a mental health survey to be conducted at a local level, preferably with private funds.

Resolution No. 3

(APPROVED AS AMENDED)

Introduced By: Pottawatomie County Medical Society

Subject: Compensation of Interns and Residents

Referred To: Insurance and Medical Service Committee

WHEREAS, the members of the House of Delegates of the American Medical Association have before them a special report submitted by the Council on Medical Education and Hospitals and the Council on Medical Service dealing with the subject "Compensation of Interns and Residents"; and

WHEREAS, one of the features of that report is a suggestion that hospital attending staff members legally associate, for the purpose of employing and compensating house officers, for the services rendered to hospital patients; and

WHEREAS, such action would inescapably invite hospitals to participate further in the corporate practice of medicine; and

WHEREAS, the report further suggests that patients who have purchased private voluntary medical-surgical insurance coverage should be cared for by house officers compensated by means of that coverage, despite the fact that most holders of such coverage have bought it so that they may enjoy the services of the private physicians of their choice; and

WHEREAS, these suggestions disregard the accepted principles that hospitals and not the members of their attending staffs, are responsible for the employment and compensation of hospital house officers; and

WHEREAS, internship and residency is the continuation of education in which a person is prepared to advance his status in life; and

WHEREAS, the marked increase of salaries for a resident will cause more doctors to specialize while the need in medicine today is for more family doctors; and

WHEREAS, the responsibility for meeting ones expenses while in training is a personal matter and should not be considered a collective problem; and

WHEREAS, if the American Medical Association will leave such matters to the individual and hospitals, the demand and supply (free enterprise) will solve the problem;

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association reaffirm and re-emphasize its recognition of the principle that it is the responsibility and duty of attending staff members to teach, guide, and counsel the house officers, but not, however, to the extent of compensating those house officers for submitting to such teaching, guidance and counseling; and

BE IT FURTHER RESOLVED, that the Oklahoma State Medical Association reaffirm its recognition of the historical fact that it is the responsibility of hospitals to employ and properly compensate their house officers for services rendered; and

BE IT FURTHER RESOLVED, that our AMA Delegates be instructed to oppose any similar proposals

at the AMA Annual Meeting in June, 1963.

Resolution No. 4

(APPROVED AS AMENDED)

Ruled similar in intent to Resolution No. 30.

Introduced By: Pottawatomie County Medical Society

Subject: National Blue Shield Service Contract

Referred To: Insurance and Medical Service Committee

WHEREAS, the new National Blue Shield plan for the aged as proposed by the American Medical Association is a service plan insurance program; and

WHEREAS, service plan insurance injects a third party for the purpose of limiting, lowering and stereotyping medical professional fees; and

WHEREAS, the doctor's fees are the economic responsibilities of the physician and his patient.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association does not approve the new National Blue Shield Service Contract for the aged and encourages its members not to participate in the program; and

BE IT FURTHER RESOLVED, that we recommend instead, an indemnity type contract be worked out.

Resolution No. 6

(APPROVED AS AMENDED)

Ruled similar in intent to Resolution No. 28.

Introduced By: Pottawatomie County Medical Society

Subject: Relative Value Schedules

Referred To: Insurance and Medical Service Committee

WHEREAS, the development of a relative value scale of fee schedules has been urged upon us and our profession, primarily by "third parties," interested neither in our profession nor our privileged relationship with our patients, but instead to satisfy their own needs and in so doing undermine the right of each individual physician to deal directly with his patient for the service to be rendered and the fee to be charged; and

WHEREAS, the development of a relative value scale of fee schedules would allow persons outside our pro-

fession to use these schedules for the purpose of bargaining, fee setting, and "total coverage" programs, and would allow these persons to use this schedule to attempt to control and "hold down" medical charges, disregarding completely that many times no fees are charged for services rendered, and that in any instance in which suitable adjustments to such programs have been attempted, the physicians and the medical profession are regarded as the sinner and "gouger," in spite of the known fact that physician's fees have not increased in proportion to the rising cost of living; and

WHEREAS, the development of such a program of relative value scale is one more attempt to enlist the physician in a program of compromise and surrender which, if allowed to continue, can only lead to the ultimate adoption of government control of such a schedule, and along with it the entire medical profession; and

WHEREAS, the development of such a program is impossible, since it cannot of necessity take into consideration the obvious non-standardization of the multiplicity of procedures in the practice of medicine, when performed by more than one physician, and cannot take into consideration that no two patients can be placed on a scale and standardized and cannot stereotype any given medical case with regards to risk, pathology, care and time involved, training of the individual physician, and many other nebulous factors that are so inherent in the time-honored doctor-patient relationship.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association considers that the only proper and satisfactory fee arrangement in a free enterprise society is that reached by private contract between individual patient and physician, and that the activities by "third parties" in the medical care field should be limited to developing contracts between themselves and potential patients.

Resolution No. 7

(APPROVED AS AMENDED)

Introduced By: Pottawatomie County Medical Society

Subject: Areawide Planning for Hospitals

Referred To: Insurance and Medical Service Committee

WHEREAS, the report of the joint committee of the American Hospital Association and the U. S. Public Health Service on Areawide Planning for Hospitals and Related Health Service is suggesting that there be planning agencies for each region of the United States is a new philosophy on future hospital building; and

WHEREAS, this philosophy is not what it appears to be on the surface, but rather through duly processed legislation would decree that only super-hospitals would be built in the future, to the exclusion of the small rural and community type hospitals at some distance from the patient's local community; and

WHEREAS, this will cause increasing dominance of the hospital building program by the State Public Health Department and the Federal Government through altered Hill-Burton approach; and

WHEREAS, Areawide Planning has been legislated into being in Illinois and New York.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association go on record as against areawide planning as now being promoted by the American Hospital Association and U. S. Public Health Service; and

BE IT FURTHER RESOLVED, that our AMA Delegates be instructed to oppose any similar plans introduced in the AMA House of Delegates in June, 1963; and

BE IT FURTHER RESOLVED, that the Oklahoma State Medical Association study the Areawide Planning Program for Hospitals in its appropriate committees with the following objectives in mind:

1. To limit each such area to regions within the state as is commensurate with the problem involved.

2. To alert the county societies to fight enabling legislation which would

convert this from a voluntary to a compulsory system.

3. To see that professional representatives (other than HEW and State Health Department personnel) be had on each such agency. Representation to be professional in all aspects but especially to include representatives of organized medicine dedicated to the preservation of free enterprise.

4. To inform the American Hospital Association and the Catholic Hospital Association that organized medicine regards compulsory areawide planning in some of its facets as an encroachment upon the private practice of medicine in hospitals.

5. To point out that the patient has a right to receive adequate medical and hospital care in his own community and not be compelled to travel a considerable distance from his home for the doubtful benefits of a larger hospital plant.

Resolution No. 9

(APPROVED AS AMENDED)

Ruled similar in intent to Resolution No. 23.

Introduced By: Pottawatomie County Medical Society

Subject: Liberty Amendment

Referred To: Legislation and Public Policy Committee

WHEREAS, the states of Wyoming, Texas, Nevada, Louisiana, Georgia, and South Carolina have formally adopted the Liberty Amendment; and

WHEREAS, the four sections of the Amendment state:

Section 1. The government of the United States shall not engage in any business, professional, commercial, financial or industrial enterprises except as specified in the Constitution.

Section 2. The Constitution or law of any state, or the laws of the United States shall not be subject to the terms of any foreign or domestic agreement which would abrogate this amendment.

Section 3. The activities of the United States Government which violate the intent and purpose of this amendment shall, within a period of three years from the date of the rati-

fication of this amendment, be liquidated and the properties and facilities affected shall be sold.

Section 4. Three years after the ratification of this amendment the sixteenth Article of Amendments to the Constitution of the United States shall stand repealed and thereafter Congress shall not levy taxes on personal incomes, estates, and/or gifts.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association go on record in support of the Liberty Amendment.

Resolution No. 10

(APPROVED AS AMENDED)

Introduced By: Pottawatomie County Medical Society

Subject: Statement of Principle

Referred To: Miscellaneous Business Committee

WHEREAS, American physicians directly serve their patients, the citizens of the United States, and are responsible to these patients; and

WHEREAS, American physicians have voluntarily assumed a responsibility to provide guidance to the public in matters of preventive medicine and health care; and

WHEREAS, this has led to assumption of a corollary obligation to publicly express opinion on programs which do or can affect the physician's capability to practice medicine in the best interests of his patients; and

WHEREAS, patients and the public have the right to know the principles under which the physicians practice and are willing to continue to practice.

NOW, THEREFORE, BE IT RESOLVED, that the House of Delegates of the Oklahoma State Medical Association endorses and affirms the following:

STATEMENT OF PRINCIPLE

As a physician, I will continue to render to all of my patients the highest quality of medical care of which I am capable, and I will assist my colleagues to do likewise.

I will undertake to diagnose and treat patients only under conditions which allow me to practice to the best of my ability and which do not cause, or tend to cause, a deteriora-

tion in the extent or quality of care I am able to render.

I believe that Americans will remain free only so long as our government does not abridge the rights and responsibilities of individual citizens; I believe that rights and responsibilities are inseparable.

I believe that Americans who are able to care for themselves should not be made wards of government for the purpose of obtaining medical care, hospitalization, food, clothing, or for any other purposes.

I believe that such governmental programs would subtract from the liberty of each American and that individual freedom is the purpose for which Americans instituted independent government on this continent.

I believe that acceptance of payment from plans that curtail the individual's rights to select health care and the individual's responsibility for such care would not be consistent with my beliefs in freedom and the best practice of medicine.

My purpose in signing this statement is to add my voice to a plea to retain maximum freedom in the United States and to contribute to the further advancement of the care physicians are able to provide patients in this country; and

BE IT FURTHER RESOLVED, that the AMA Delegates be instructed to support the intent of the above statement.

Resolution No. 11

(APPROVED AS AMENDED)

Ruled similar in intent to Resolutions No. 20 and 21.

Introduced By: Pittsburg County Medical Society

Subject: Payment of Physicians for Services Rendered to Welfare Recipients

Referred To: Insurance and Medical Service Committee

WHEREAS, the time and thinking of the members of the Oklahoma State Medical Association have changed with the years in that doctors now accept pay for the care of patients hospitalized by the Department of Public Welfare in a number of categories, particularly those of Old Age Assistance, Aid to Dependent Children, and others; and

WHEREAS, in fact there are now relatively few doctors in the State of Oklahoma who do not accept pay for hospitalized patients under the welfare program, except those doctors treating only children, who are prohibited by law from being so paid; and

WHEREAS, doctors now accept pay for office calls on children who are wards of the Child Welfare Department as well as wards of the State Welfare Department who are maintained outside the homes under Foster Care, but once these same children enter a hospital door, no pay is allowed for medical care.

NOW, THEREFORE, BE IT RESOLVED, that:

1. The Oklahoma State Medical Association go on record as being not opposed to accepting pay for hospitalization of patients under the Crippled Children's Act.

2. The State Legislative Committee of the Oklahoma State Medical Association be instructed to enter into negotiations with the Department of Public Welfare to determine the manner and terms under which payment can be made and what legislative changes in the provisions of the present law will be necessary to accomplish its purpose.

Resolution No. 12

(APPROVED AS AMENDED)

Introduced By: OSMA Resolutions Committee

Subject: Participation of the American Medical Association As Observers in World Health Organization Meetings

Referred To: Miscellaneous Business Committee

WHEREAS, the World Health Organization, having been formed under the United Nations, is now engaged in an extensive program to eliminate the causes of disease and improve world health; and

WHEREAS, the American Medical Association should observe the progress and activities of this organization as part of its responsibility to the physicians and the people of the United States; and

WHEREAS, the American Medical Association can contribute direction to the World Health Organization

through its role as an observer; and
WHEREAS, the avenue for such participation and cooperation already exists through the National Citizens Committee for WHO.

NOW, THEREFORE, BE IT RESOLVED, that our Delegates to the AMA support observation in the WHO through membership in the National Citizens Committee, unless they become convinced that such participation would constitute endorsement of this organization.

Resolution No. 13
(DISAPPROVED)

Introduced By: Tulsa County Medical Society

Subject: Amending the Medical Practice Act to Permit Foreign Medical Graduates to Serve as Residents in Recognized Teaching Hospitals of Oklahoma

Referred To: Legislation and Public Policy Committee

WHEREAS, there is a nationwide shortage in the number of American medical graduates to fill available residency positions in the teaching hospitals of Oklahoma, as of all other states; and

WHEREAS, in the vast majority of states, foreign-born and trained medical graduates are accepted as residents; and

WHEREAS, adequate procedures exist for the screening of foreign medical graduates through the examinations in English and medicine by the Educational Council for Foreign Medical Graduates; and

WHEREAS, the present Medical Practice Act of Oklahoma does not permit the acceptance of foreign medical graduates as residents; and

WHEREAS, the teaching hospitals of the State of Oklahoma and their patients are deprived of the services of many qualified residents, and the State of Oklahoma is deprived of its share to contribute to the improvement of medical knowledge abroad.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association take appropriate action to propose and initiate a change in or amendment to the Medical Practice Act of Oklahoma, to permit foreign medical graduates to serve as residents in the recognized

teaching hospitals in Oklahoma; and

BE IT FURTHER RESOLVED, that in order to execute such change or amendment, it is proposed that (a) either residents in recognized teaching hospitals be exempted from any license requirements, or (b) that such residents be given a temporary license or permit, not based on citizenship, valid only for the duration of the residency, to be renewed annually, but not beyond a period of four (4) years; and

BE IT FURTHER RESOLVED, that the screening examination of the Educational Council for Foreign Medical Graduates, as endorsed by the American Medical Association, is recognized and made legally the basis for admitting any foreign medical graduates as either interns or residents.

Resolution No. 14
(APPROVED)

Introduced By: Tulsa County Medical Society

Subject: Air Pollution Control

Referred To: Legislation and Public Policy Committee

WHEREAS, it is agreed that the best medicine practiced is preventive medicine; and

WHEREAS, it is a matter of record that efforts are being made both publicly and privately to attract more industry into the State of Oklahoma; and

WHEREAS, the history of the difficulty of the solution of the problems of water pollution are well known; and

WHEREAS, the difficulty of solving a major air pollution problem after it occurs, is well known; and

WHEREAS, these problems have, in cities all over the world, caused illness and death and discouraged population growth and industrial development; and

WHEREAS, specific instances of air contamination have already occurred in Oklahoma.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association endorse the need for appropriate legislation directed at the prevention and control of air pollution. This body recommends such action to His Honor, Governor

Henry Bellmon, and the Legislature of the State of Oklahoma.

Resolution No. 16
(APPROVED)

Introduced By: Tulsa County Medical Society

Subject: Free Choice of Physician in Workmen's Compensation Cases

Referred To: Insurance and Medical Service Committee

WHEREAS, the present Workmen's Compensation statute of Oklahoma does not provide the injured employee any voice in the selection of the treating physician; and

WHEREAS, the principle of free choice of physician is inherent in the medical profession and inherent to the doctor-patient relationship.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association through its recognized committees seek to change the first sentence of Title 85, Section 14 of the 1961 Oklahoma Statute on Workmen's Compensation to read: "The employer shall promptly provide for an injured employee such medical and surgical or other attendance, or trained nurse, and hospital services, medicine, crutches and apparatus as may be necessary and mutually agreeable to the employer and the employee during 60 days after the injury or for such time in excess thereof as in the judgment of the Commission may be required."

Resolution No. 17
(APPROVED AS AMENDED)

Introduced By: Tulsa County Medical Society

Subject: Immunization Education Program

Referred To: Miscellaneous Business Committee

WHEREAS, the House of Delegates has previously adopted, for good and sufficient reason, a resolution instructing the Oklahoma State Medical Association to develop an effective program of public education concerning immunizations available against preventable illnesses and diseases, in cooperation with all other interested parties, specifically the Oklahoma State Department of Public Health; and

WHEREAS, the need for this program continues to be apparent despite widespread campaigns through local medical societies, principally directed against poliomyelitis.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association, through appropriate councils and committees, be instructed to enlarge and intensify its continuing public education campaigns against preventable illness, and to initiate new and continuing programs in cooperation with any reputable agency or private concern offering assistance and cooperation; and

BE IT FURTHER RESOLVED, that the Oklahoma State Medical Association sponsor appropriate legislation in the Oklahoma State Legislature, to provide funds for the administration of an adequate immunization education program; and

BE IT FURTHER RESOLVED, that the program be developed and administered in keeping with the principle that immunization shall be the individual financial responsibility of the citizen, whenever possible.

*Resolution No. 18
(DISAPPROVED)*

Introduced By: Tulsa County Medical Society
Subject: Immunizations by Public Health Departments
Referred To: Miscellaneous Business Committee

WHEREAS, the interpretation of the Attorney-General of the State of Oklahoma of the law setting up the Oklahoma State Department of Public Health, is that its services are available to all citizens regardless of ability to pay; and

WHEREAS, the Oklahoma State Department of Public Health in an appropriate function, sponsors clinics for immunizations against preventable illnesses, regardless of ability of recipients to pay; and

WHEREAS, it represents an unnecessary expense to the taxpayers to pay for immunizations of individuals with means, where this is locally available through non-public sources.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association through appropriate council or committee, sponsor legislation in the Oklahoma State Legislature, allowing the Oklahoma State Department of Public Health to use guide lines adopted by the Oklahoma State Department of Public Welfare, in providing services for individuals where this is consistent with available community resources and maintenance of proper protection of the public health; and

BE IT FURTHER RESOLVED, that the Oklahoma State Medical Association, through appropriate executive action, request the Oklahoma State Department of Public Health to avoid duplication of facilities for immunizations, when the local ability to provide this service is available.

*Resolution No. 24
(APPROVED AS AMENDED)
Ruled similar in intent to Resolution No. 8.*

Introduced By: Oklahoma County Medical Society
Subject: Mental and Public Health
Referred To: Legislation and Public Policy Committee

WHEREAS, the Administrative branch of our Federal Government has proposed federal public health financed construction and staffing of community mental health centers throughout the nation; and

WHEREAS, these centers will become the equal financial responsibility of federal, state and community taxpayers, each source eventually contributing a billion dollars to the program, thereby enlarging the one and one-fourth trillion dollar mortgage on future generations through an already fantastic method of deficit spending for politically defined and oriented current "needs" of our citizens; and

WHEREAS, the need for such a program has not been established and the definition of the state of mental illnesses has not been established even among psychiatrists and certainly not through politically motivated federal laity who historically have successfully detracted from the excellence, economy, and magnitude

of local care by substituting Federal care; and

WHEREAS, the federal administration has recognized a shortage of trained psychiatrists for existing mental health facilities and have proposed the use of psychologists and social workers to staff community mental health centers—a manifest and serious danger to the existing status of our national mental health; and

WHEREAS, the training and ability of all members of the medical profession presently caring for the mental health needs of our people are surely superior to that of non-medical federally trained mental therapists, and as proposed, housewives; and

WHEREAS, the plan for community mental health programs proposes state and federal public health supervision and operation with some 12 such centers already functioning under the Oklahoma State Department of Public Health. Recent federal plans propose the use of Domestic Peace Corps personnel in such facilities.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma County Medical Society continue to support the best possible training of more psychiatrists and optimum use and needed expansion of existing medically administered and supervised community mental health facilities for those persons with a medically established mental health need and go on record as opposing these present health proposals; and

BE IT FURTHER RESOLVED, that public health activities be confined to mass preventive programs and not be extended into the fields of diagnosis and therapy; and

BE IT FURTHER RESOLVED, that this resolution be considered the policy of the Oklahoma State Medical Association.

*Resolution No. 25
(APPROVED AS AMENDED)*

Introduced By: Oklahoma County Medical Society
Subject: Comprehensive Areawide Community Health Surveys

Referred To: Miscellaneous Business Committee

WHEREAS, there can be only commendation for voluntary group and community cooperative efforts toward the improvement of health, now and in the future; and

WHEREAS, Medicare programs of all sorts are gradually forcing the state through the channels of "earning" federal funds by matching state funds to enforce federal operation and control of local community and group activities; and

WHEREAS, local community and group programs in health and all other endeavors provide the most economical, well supervised and effective means of local social betterment.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association go on record as favoring local, competitive, voluntary welfare programs and planning of health, education, and welfare; and

BE IT FURTHER RESOLVED, that Oklahoma State Medical Association members exert every effort to support and work with local group and community; and

BE IT FINALLY RESOLVED, that Oklahoma State Medical Association members exert every effort to prevent such community plans from being legislatively incorporated into state or federal programs of financing.

Resolution No. 26

(APPROVED AS AMENDED)

Introduced By: Oklahoma County Medical Society

Subject: United States Chamber of Commerce

Referred To: Insurance and Medical Service Committee

WHEREAS, our profession in the practice of the Art and Science of Medicine has been seriously threatened and much progress made by those who would subsidize and control our professional activities from the federal level; and

WHEREAS, we as physicians, though much concerned and somewhat active in combating this threat, have not been and are not able to

halt the constant invasion of Medicare programs; and

WHEREAS, the largest business and professional organization in our nation, the United States Chamber of Commerce, has placed Medicare among the half dozen top threats to the survival of our nation and has been given credit by officials in the American Medical Association as being the most powerful force in the nation opposing Medicare.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association apply for membership in the United States Chamber of Commerce; and

BE IT FURTHER RESOLVED, that this affiliation, in providing a voting privilege in the United States Chamber of Commerce be used each year to lend more force to the principles of social action in which we believe; and

BE IT FURTHER RESOLVED, that our action be made known to all county medical societies in Oklahoma and presented as a resolution to the state medical association to encourage the application of these organizations for voting membership in the United States Chamber of Commerce.

Resolution No. 27

(APPROVED AS AMENDED)

Introduced By: Oklahoma County Medical Society

Subject: Appropriation for Medical Examiners Law

Referred To: Insurance and Medical Service Committee

WHEREAS, after long and continued effort by members of the Oklahoma State Medical Association, a satisfactory law was passed regarding unexplained deaths in the State of Oklahoma; and

WHEREAS, members of the Board of Unexplained Deaths and many physicians of the state have given their time and skill to insure the function of such law; and

WHEREAS, since the passage of said law, no funds have been appropriated to insure its workability.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association requests that such funds be appropriated when

available as necessary for the Board of Unexplained Deaths to fulfill the functions intended.

Resolution No. 31.

(APPROVED)

Introduced By: Washington-Nowata County Medical Society

Subject: The Bauer Statement

Referred To: Legislation and Public Policy

WHEREAS, the House of Delegates of the American Medical Association in June, 1961, enthusiastically endorsed the statement of principle introduced by Doctor Louis H. Bauer; the statement being as follows:

"The House of Delegates of the American Medical Association records its opposition to any legislation of the King-Anderson type. Its opposition is based on the facts that such legislation does not meet the needs of the situation; interferes with the doctor-patient relationship, interferes with the rights of doctors employed in hospitals; is inordinately expensive, leads inevitably to further encroachments by government into medical care, results eventually in a deterioration of the type of medical care rendered the public; and is therefore detrimental to the public interest.

"The House of Delegates invites attention to the fact that the medical profession is the only group which can render medical care under any system and that the medical profession is best qualified to determine how the best medical care can be delivered.

"The House of Delegates believes that the medical profession will see to it that every person receives the best available medical care regardless of his ability to pay; and it further believes that the profession will render that care according to the system it believes is in the public interest; and that it will not be a willing party to implementing any system which we believe to be detrimental to the public welfare."; and

WHEREAS, the federal administration continues to push for a type of medical care for the elderly regarded by most physicians as inimical to the best interests of both

patient and physician; and

WHEREAS, the administration has instituted traveling Department of Health, Education and Welfare Conferences (at taxpayers expense) to try to sell this fallacious idea to the public.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association approves the Bauer statement and encourages its members in each county of the State of Oklahoma to help formulate and effectuate definite plans to inform the public correctly and to oppose all legislation of the King-Anderson type.

BE IT FURTHER RESOLVED, that the doctors of the OSMA will pledge themselves to continue to care for all patients regardless of ability to pay.

Resolution No. 32.

(APPROVED)

Introduced By: OSMA Resolutions Committee

Subject: Preceptorship Program

Referred To: Insurance and Medical Service

WHEREAS, the preceptorship method of teaching medical school students has had an adequate trial of its objectives and function; and

WHEREAS, this program has had a good influence on the students, to acquaint them with the problems and virtues of private practice; and

WHEREAS, the program has been an asset to the preceptor as well.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association commends the University of Oklahoma School of Medicine for its preceptorship programs; and

BE IT FURTHER RESOLVED, that the program be continued as an integral part of every medical student's course of instruction.

Resolution No. 33.

(APPROVED)

Introduced By: OSMA Resolutions Committee

Subject: Foreign Interns and Residents

Referred To: Miscellaneous Business

WHEREAS, in the preceding years, there have been large numbers of graduates of foreign medical schools serving as interns and residents in the United States; and

WHEREAS, many approved hospitals have only these graduates for internships and residencies; and

WHEREAS, the Council on Medical Education and Hospitals of the American Medical Association has recommended that house staffs should be composed of at least 25 per cent graduates of U.S. or Canadian Schools, but has further encouraged all hospitals to use some foreign graduates in house staff capacities.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association approves the recommendation for a 25 per cent minimum of U.S. or Canadian graduates; and

BE IT FURTHER RESOLVED, that a hospital should not be rated downward for accreditation if it does not have any foreign graduates on its house staff.

Resolution No. 34

(DISAPPROVED)

Introduced By: OSMA Resolution Committee

Subject: Attendance at AMA Specialty Meetings Without Being Identified With Specialty Group in AMA Directory

Referred To: Miscellaneous Business Committee

WHEREAS, section meetings of the AMA meetings are for educational purposes; and

WHEREAS, members of the AMA have been privileged to register for any of the section meetings in which he might have some interest; and

WHEREAS, the present situation would appear to be most democratic and most appealing to the members of the AMA; and

WHEREAS, there is at present evidence of a diabolical scheme to limit attendance at various section meetings to those members who are identified in the latest issue of the AMA Directory with that section; and

WHEREAS, this would seriously hamper further educational possibilities of the individual member.

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association officially oppose any scheme that might prevent any individual member from registering in the section meeting of his choice.

Resolution No. 35.

(APPROVED AS AMENDED)

Introduced By: OSMA Resolutions Committee

Subject: Amending the Bylaws of the OSMA Lowering the Number for a Quorum at any House of Delegates Meeting.

Referred To: Constitution and Bylaws Committee

WHEREAS, the Bylaws of the OSMA presently require a majority of the certified and qualified delegates to be present in order that business of the House of Delegates might be done; and

WHEREAS, it is frequently impossible to obtain such a majority at House of Delegates Meetings; and

WHEREAS, there are times when it is mandatory to make decisions of great magnitude involving the business of the association.

NOW, THEREFORE, BE IT RESOLVED, that Section 3.03 of Chapter III of the Bylaws be changed to read:

"A majority of the certified and qualified delegates shall constitute a quorum at the annual meeting. One-third of the certified and qualified delegates shall constitute a quorum at special or called meetings."

Resolution No. 36.

(APPROVED AS AMENDED)

Ruled similar in intent to Resolution No. 19.

Introduced By: Wendell L. Smith, M.D., Trustee

Subject: Mental Health In Oklahoma
Referred To: Legislation and Public Policy Committee

WHEREAS, it has come to the attention of the Oklahoma District Branch of the American Psychiatric Association, an organization composed of medical doctors who live and practice the specialty of psychiatry in the State of Oklahoma, that the Oklahoma legislature now in session is considering various proposals to divide authority and responsibility

for direction of the Department of Mental Health between a layman and a physician; to remove the schools for the mentally retarded from medical direction and from the Department of Mental Health, to place the Department of Public Health, and the community mental health clinics under the direction of the Department of Public Health, and to do various other things profoundly affecting the public programs for the care and treatment of the citizens of Oklahoma suffering disability of mental and emotional origin; and

WHEREAS, the health and well-being of its citizens is among the chief concerns of government, and mental and emotional health is recognized as being one of the most central and crucial factors affecting the health and well-being of the individual, as well as his society as a whole; and

WHEREAS, the history of the treatment of the mentally ill in this state, and in the nation, reveals only too clearly that the successful and humane care of the mentally disabled citizens is an exceedingly complex, difficult, and delicate operation, requiring dedicated, skilled, and experienced judgment of the highest order; and

WHEREAS, such programs as the people of Oklahoma now possess have been evolved out of a long and painful struggle, replete with inadequacies and costly mistakes, demonstrating clearly that well-meaning but ill-considered experimentation, no less than abject neglect can bring untold harm and needless suffering to those who can least afford it; and

WHEREAS, the human and material resources available are, and have been, at best, barely adequate to render care at the barest of minimum levels; and

WHEREAS, it is questionable whether the state can, at best, command for its citizens in today's market, more than the barest minimum of the professional skills and knowledge necessary to translate the newer scientific knowledge rapidly becoming available into action programs to alleviate the suffering of the mental-

ly ill and promote the mental health and efficiency of the many whose capacities are border-line and wavering; and

WHEREAS, there is every indication that steady and even unprecedented progress has been made under the administrations of the Department of Mental Health since the inauguration of the present Mental Health Act (Title 43, OSL 1953) despite the many obstacles and shortcomings then, and now, in existence.

NOW, THEREFORE, BE IT RESOLVED, that the recommendation of the Oklahoma District Branch of the American Psychiatric Association be endorsed by the Oklahoma State Medical Association:

A. That Section 11 through 22, inclusive, of the present Mental Health Law (Title 43, OSL 1953) be retained without change;

B. That it is essential to an efficient and effective program to meet the mental health needs of the people of Oklahoma because of the close natural inter-relationships existing between mental hospitals, community mental health clinics, and programs for the mentally retarded, that these mental health operations be administered by a definitive Department of Mental Health, separate and distinct from Departments of Welfare and Public Health (which have other purposes, functions, and methods);

C. That the imperative need for a well-organized and operated program for mental health at the community level be recognized at the state, as it has been at the national level; and

D. That steps be taken to establish Regional Mental Health Centers, strategically located throughout the state, in numbers commensurate with the availability of adequately trained professional staff under the leadership and direct supervision of medical doctors who are recognized specialists in psychiatry.

Resolution No. 37.

(APPROVED AS AMENDED)

Introduced By: Walter E. Brown,
M.D., Trustee

Subject: Membership in the American Medical Association

Referred To: Miscellaneous Business Committee

WHEREAS, discussion regarding the advisability of required membership in the AMA for members of the Oklahoma State Medical Association comes up regularly at each year's annual meeting; and

WHEREAS, it is a matter of record that the Oklahoma State Medical Association is one of fifteen such associations that requires AMA membership for all its members; and

WHEREAS, proper evaluation of the sentiment of members at large of this state association can be obtained through a mail referendum by the president of the association if duly requested by the House of Delegates.

NOW, THEREFORE, BE IT RESOLVED, that the House of Delegates request the President of the Oklahoma State Medical Association to conduct a statewide vote of all members of the association as to whether they are opposed or in favor of required membership in the American Medical Association for all members of the Oklahoma State Medical Association to be in good standing.

AND BE IT FURTHER RESOLVED, that the results of this referendum be published in the Journal of the Oklahoma State Medical Association.

Resolution No. 38.

(APPROVED AS AMENDED)

Introduced By: E. E. Shircliff, M.D.,
Trustee

Subject: Lifetime Learning For Physicians

Referred To: Miscellaneous Business Committee

WHEREAS, the primary function of the American Medical Association is to promote the standards of medical education in the United States; and

WHEREAS, at the November, 1962, Clinical Session, the AMA House of Delegates approved an informational report on the document "Lifetime Learning for Physicians" which is to be used as a guide for a national program of continuing education; and

WHEREAS, said document known

as the Dryer Report, having been studied carefully since the earlier meeting of the American Medical Association, does place undue emphasis on electronic means of communication together with other commonly used means of communication in education and pays only passing tribute to the many present areas of postgraduate education now planned, developed and implemented by the efforts of clinical societies, specialty groups, national and sectional, the AAGP, state medical societies and county medical societies to provide varied and continuing programs of education.

THEREFORE, BE IT RESOLVED, that all of the above organizations be urged and encouraged by the House of Delegates of the OSMA to continue their efforts in postgraduate education; and

BE IT FURTHER RESOLVED, that our Delegates to the AMA be instructed to support submitting the Dryer Report to a reference committee for study and the determining of its logical role in Postgraduate Education together with present facilities and efforts existing in American medicine today.

Resolution No. 39
(NO ACTION TAKEN)

Introduced By: Cecil Stansberry,
M.D., Delegate
Subject: Reconsideration of House
Joint Resolution 535.
Referred To: Legislation and Public
Policy Committee

WHEREAS, The House of Delegates of the Oklahoma State Medical Association, meeting in regular ses-

sion on the 3rd day of May, 1963, has considered certain problems affecting the education and training of physicians, nurses and medical technologists, and the practice of medicine in Oklahoma; and

WHEREAS, construction of a new six hundred bed hospital is being promoted but such program has not been officially acted upon by the President of the University, the Board of Regents of the University of Oklahoma, nor the Oklahoma State Regents for Higher Education; and

WHEREAS, a recommendation has been made by the secretary and certain officers of the University of Oklahoma Alumni Association, requesting that the Honorable House of Representatives and Senate of the 29th Legislature of the State of Oklahoma, to give consideration to a proposal that would be submitted to a vote of the people, authorizing a bond issue for the construction of such six hundred bed hospital, which proposal is in the form of HJR 535; and

WHEREAS, it has been claimed that federal funds will be available to finance, in large part, the construction of such hospital, but there has been no satisfactory assurance of the source and availability of federal funds for such purpose; and

WHEREAS, no investment should be made in increased hospital facilities, unless and until there is a demonstrated, established need and reasonable assurance that the state can and will provide funds to operate such facilities; and

WHEREAS, all existing facilities at the University Hospitals are not now being utilized, since 23.40 per

cent of the 470 beds now available are not occupied and have not been during the past year, and there has been no showing of a need for additional facilities; and

WHEREAS, the House of Delegates appreciates the interest shown by the Honorable House of Representatives and Senate of the 29th Legislature in the primary purpose of the Medical Center for advancing the medical education training program in Oklahoma, but feels final action on HJR 535 should not be taken until its actual purpose and ultimate effect has been carefully studied;

NOW, THEREFORE, BE IT RESOLVED BY THE HOUSE OF DELEGATES OF THE OKLAHOMA STATE MEDICAL ASSOCIATION:

SECTION 1. That the Honorable Senate of the 29th Legislature of Oklahoma, now in session, be requested to reconsider its vote on HJR 535, and not to give final approval thereto until appropriate study has been made of such proposal, and authorized representatives of the Oklahoma State Medical Association have been given an opportunity to present the views and recommendations of the association to a proper committee of the Senate, and investigation has been made as to the immediate necessity for such hospital, the availability of federal funds for the construction of the proposed hospital and the ability of the legislature to provide sufficient funds for the operations of such hospital.

SECTION 2. That a copy of this resolution be sent to each Member of the Honorable State Senate and House of Representatives.

1964 ANNUAL MEETING
Oklahoma State Medical Association
Skirvin Hotel – May 1, 2 and 3, 1964
OKLAHOMA CITY, OKLAHOMA

THE FOOD AND DRUG Administration is increasing the flow of scientific information to the medical professions under the Kefauver-Harris Drug Amendments of 1962 to stimulate research and increase public protection, Commissioner George P. Larrick said recently.

Mr. Larrick told medical, dental, pharmacy and nursing school graduates at the University of Tennessee that this will be accomplished through professional organizations and journals and occasionally by letters mailed directly by FDA to members of the professions.

The Commissioner called the Kefauver-Harris Drug Amendments enacted last fall "the most comprehensive modernization of the national drug laws in a generation. The amendments without doubt will be a model for drug legislation in much of the world," he added.

Commissioner Larrick told the graduating doctors, nurses and pharmacists that the new legislation has two fundamental aims—to improve the reliability of drugs and to improve communication of information about these drugs, their side effects and contraindications as well as their advantages.

He predicted that the new law likewise will contribute to better and more effective drug research.

He said the drug sponsor must be sure tests on man are justified before he may begin trials on man. Then he must advise the Food and Drug Administration of adverse reactions during trials and after the drug is marketed under an approved New Drug application.

However, Mr. Larrick warned, "The most careful pre-market testing cannot be expected to reveal as much about a drug as does widespread use of the product in general practice." While the manufacturer or sponsor of a drug must now advise the Government promptly of adverse reactions that come to his attention, he may not receive reports of some very significant observations on a new drug.

Calling for the help of medical and other scientific professions to implement the new legislation, Commissioner Larrick declared:

"We pledge to you and other members of our great health professions the full support of the Food and Drug Administration. And we solicit your advice and support in our efforts to assure the integrity of the drugs and devices you use." He added, "We expect in the future to advise you more fully than we have in the past of significant developments in our area."

The Commissioner said that the Nation has developed an entirely new and more efficient battery of instruments, drugs and techniques in the fields of medicine and dentistry over the past 20 years. "The present decade, 1960-1970," he said, "will see even greater expansions of medical, dental and pharmaceutical research. It will see the application of new, more efficient techniques to deal with chronic as well as infectious processes."

Mr. Larrick said that as newer medicines, devices and techniques are developed, there must be assurance that they have been properly manufactured, properly tested and truthfully promoted. The patient, he said, must have confidence not only that his doctor, dentist, pharmacist and nurse are competent, but also that the tools and drugs they use are safe. "It is here that the medical professions and the Food and Drug Administration have their closest relationship," he said. "We are dependent upon each other."

Under the new legislation, Mr. Larrick said, FDA can offer assurance that drugs shipped in interstate commerce have been proved safe and effective. He said further legislation is being considered to offer the same assurance with respect to therapeutic devices.

Speaking of truthful labeling of medicines and devices, the Commissioner said that the kind of quackery that used to be peddled from the back of a covered wagon is decreasing. Instead, he said, "We are confronted with sophisticated types of misrepresentation which involve subtle, apparently scientific presentations designed to mislead in-

formed consumers as well as members of the medical profession . . .”

FDA, he said, will need the continued strong support of the health professions to deal with these problems. □

The Place and Function of the Nursing Home in the Community

PEOPLE ARE living longer! One of the major concerns in the health field today is the care of these Americans who are living longer. Senator Pat McNamara in a speech to the U. S. Senate stated “If medical progress continues, there is no reason why human beings cannot live to the age of one hundred and twenty-five.”

The nursing home has been created of necessity by our rapidly changing world in which these people are living longer. The chief problem among these persons seems to be a long-term chronic illness or a physical disability. Nursing homes are designed to care for these patients who are no longer in need of hospital care; which service was utilized by them at the beginning of the aforementioned illness or disability, but these patients are not able to receive adequate nursing care in their own homes.

The placement of a parent in a nursing home by a son or daughter, for the reasons stated herein, is becoming more and more an everyday reality. The problem of aging and the seeking of nursing care for the aged older person has had a great impact on the family, which is the basic unit of our society. It is in this manner that this traditional care facility has assumed its place in the community.

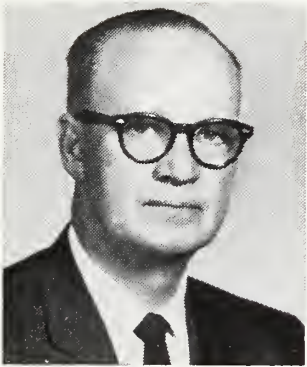
The nursing home administrator realizes that health is not merely the absence of disease; but the capacity of the individual to operate socially, physically and psychologically at his normal level. Because of this realization, more and more services are being inaugurated by the nursing home. The administration of drugs, medicines and narcotics, the preparation and execution of special diets, the administration of special therapy and many more aspects of health care are now being offered by the skilled nursing

home. It is of utmost importance that members of the healing arts professions know where they may secure for their patients the type of medical care those patients need. The skilled nursing home is well established in Oklahoma today because of the close cooperation that exists between it and the attending physician of patients placed in the nursing home by physicians of the local community. The physician is able to know that his instructions are properly carried out, that adequate records are maintained and that his patient is either recovering or living in a pleasant environment. He is able to place the same confidence in the skilled nursing home that he has always been able to place in the hospitals which care for his patients when there is need of hospital care.

Since the number of beds in nursing homes has more than doubled in the past ten years, the nursing home operator has realized that the problem of health is not the only problem facing these persons. In an attempt to meet the needs of persons who reside in nursing homes it has been necessary to face the fact that all individuals want to be accepted. Upon entering a nursing home an individual is subjected to a change and adjustment from the social structure in which he previously had lived and which he had been led to believe had been constructed that he might be able to live as well as possible. It is now part of the procedure in a nursing home that an individual's social needs are considered along with his basic needs of life and health. The factual situation is determined, the situation is diagnosed and then the decision is made as to the proper manner in which the social needs of the individual may best be met.

In a program of rehabilitation emphasis is placed on the restoration of the disabled person to the maximum of his capacity. This does not mean that the restoration will provide the individual with economic security. Our culture places the highest premium on the worth of every single human being, and the right of each human being to participate actively in the life process to the extent that he is able. It is of utmost importance that the patient in a nursing home retain his independence and individuality. Consideration must be given to the problem of creating a joy of living in the nursing home patient and

(Continued on Page 346)



Undoubtedly one of the highlights of the year to date has been the legislative trip to Washington. It was well conceived, well planned and well attended. It should be an annual affair. We owe a debt of gratitude to all who gave of their time to attend. The Senators and Representatives were well impressed. The members of the AMA field staff were high in their compliments and stated that this was one of the best things that could be done. It is most certain that all who went enjoyed their trip and learned many things that will be of value in the future.

The Senators and Representatives liked the idea that we would make a special trip to see them, and especially so many of us. They were impressed that so many wives came along, and that the children were brought along that they might learn. They expressed pleasure that WE fed THEM as they are usually the ones that pick up the tab.

We heard repeatedly that as good citizens we should let our wishes be known; and that we should take an interest in government and politics. We were told very pointedly, that to be most effective, we should be interested in all governmental affairs rather than to be interested only in those issues that most directly affect us. It was emphasized that practical politics is a year around job that involves continuous contacts as well as daily work at home with voters and interested groups.

We all felt that the legislators want to do a good job. They want to feel that they are representing the majority of the home folks. They like to be told when we are pleased—even more than when we are displeased. They want expressions from the home folks on all issues.

We must also remember that they have other ties and obligations. They have their own personal convictions. They have their party obligations. They have another greater obligation that is too often forgotten: they represent the United States as a whole, as well as their state or district. If they are to be statesmen they may find themselves in the position of voting for the best interests of the Nation, when on the surface it might seem that they are not voting for the best interests of their state. On this point, they and we, must keep in mind that if it best serves the Nation as a whole then our state and our district must eventually be best served.

Soon our "Operation Hometown" will be swinging into action. The things we observed, the things we were told and the impressions we gained would make a primer in practical politics:

1. Write your Senators and Representatives.

(Continued on Page xlvi)

RENAL HYPERTENSION:

Its Diagnosis and Management*

FREDERIC N. SCHWENTKER, M.D.
WILLIAM W. SCOTT, M.D.

Renal hypertension should always be suspected in patients under 30 years of age, especially if the onset is rapid and the hypertension is of the malignant type.

Modern methods permit the correct diagnosis of renal hypertension in nearly 100 per cent of such patients.

ONLY THREE YEARS after Goldblatt's¹ demonstration in 1934 of experimental renal hypertension, Butler² performed the first successful nephrectomy directed at the cure of hypertension. Over the ensuing years, nephrectomy for hypertension enjoyed great popularity, though its success rate left much to be desired.

In 1956, Homer Smith³ reviewed the 575 reported cases of renal surgery for hypertension and concluded that less than a third of them could be termed successful by his criteria. Smith made a plea at that time for more adequate selection of cases for renal surgery, and was one of the first to suggest that differential renal function studies of-

fered promise in separating those patients likely to be benefitted by surgery.

Since then the efforts of many investigators in this field have added much to our diagnostic armamentarium. The patient has benefitted in two ways: First, whereas only a third of the cases operated on a decade ago received benefit from their surgery, most recent reports indicated that upwards of 80 per cent of carefully selected patients will have amelioration of their hypertension following renal or renal artery surgery.⁴ Second, more and more cases of renovascular hypertension that previously went unrecognized by the techniques employed in the past are being found amenable to surgical cure. Smith³ in 1956 estimated that no more than two per cent of "essential" hypertensives could be expected to have renovascular hypertension. More recent estimates indicate this figure to be between five and ten per cent;⁵ and as techniques improve, we may find it to be even higher. This number becomes increasingly more significant when we consider that hypertension of renal origin is often of a severe nature and, in addition, often occurs in the younger age group.

There are now available to the physician numerous tools for the selection of hypertensive patients for surgery. Each of these tools has its proponents and there are conflicting reports as to the efficacy of each in the diagnosis of curable renovascular hypertension. It is important to emphasize that,

*From the James Buchanan Brady Urological Institute, the Johns Hopkins Hospital, Baltimore 5, Maryland. Presented at the Annual Meeting of the Oklahoma State Medical Association, Friday, May 3, 1963.

while each of these tools can be of great value in arriving at a decision, each patient must be evaluated separately; and the decision of whether to operate or not should be made only after as much data as possible have been collected.

The different proposals fall into several main categories:

1) *Intravenous Pyelogram*—The conventional intravenous pyelogram offers an opportunity of discovering the more gross defects. Its usefulness as a tool is severely hampered, first, by its inability to distinguish a kidney causing hypertension from one made abnormal by many other diseases not causing hypertension; and second, by the fact that it will show a disparity in less than 50 per cent of the cases of curable renovascular hypertension.⁶ Modifications such as the one, two and three minute films⁷ and the hydrated intravenous pyelogram offer some improvement in both facets, but are still subject to the same objections.

2) *The Radioactive Renogram and Renal Scintiscan*—These isotope procedures have been advocated as good screening tests because of their relative simplicity and safety. Original techniques using diodrast have largely been discarded, and the more recent methods employing radiohippuran⁸ and Hg²⁰³ mercurial diuretics have offered more promise.⁹ Although they cannot identify a kidney which is causing hypertension, and thus are subject to false positives, they appear to be more sensitive in regard to false negatives than the intravenous pyelogram and hence are candidates for screening tests. Their real value, however, must await further evaluation.

3) *Aortography*—This and the differential function studies are the most popular of the various tools. Its usefulness in competent hands has been more than adequately demonstrated.¹⁰ That it may also have false positives and false negatives, however, is becoming increasingly more evident. There have been a number of reports in the literature of renal artery lesions seen on aortography in normotensive patients¹¹ and a significant number of patients with curable renovascular hypertension will have normal aortograms.

4) *Angiotensin Blood Levels*—Recent reports of angiotensin blood levels both from

arterial blood and from renal venous blood obtained by catheterization have been encouraging.¹² However, this method awaits the more careful evaluation of the conflicting reports of the presence of angiotensin in hypertensive patients and a more reliable and feasible method for the assay of angiotensin in the blood.

5) *Differential Renal Function Studies*—Since the Howard test was introduced in 1957,¹³ many workers have suggested modifications to improve the sensitivity and accuracy of differential renal function studies. It is of great importance to emphasize that no test will be effective without strict adherence to carefully controlled conditions and basic principles of renal physiology. Perhaps the most clinically feasible test and the one which has been shown to be subject to the fewest number of false negatives and false positives is the test developed by Stamey.^{14, 15}

It has been established that the fundamental characteristic of the ischemic kidney is an excessive reabsorption of salt and water. Many renal diseases such as pyelonephritis, stone, cyst, tumor, etc. will result in a decreased renal blood flow with a proportional decrease in the urine flow rate. Thus a heminephrectomized kidney will have a 50 per cent reduction in renal plasma flow and a proportional 50 per cent reduction in urine flow rate (figure 1). An ischemic kidney, however, with the same 50 per cent reduction in renal plasma flow will, because of the excessive reabsorption of salt and water characteristic of ischemia, have its urine flow rate reduced 80 per cent instead of 50 per cent.

In 1960, Frederic N. Swentker, M.D., graduated from the Johns Hopkins University School of Medicine where he is now located, working with the Brady Urological Institute.

William W. Scott, M.D., Professor of Urology at the Johns Hopkins School of Medicine, graduated from the University of Chicago School of Medicine in 1939.

He is a member of the American Urological Association, the American Association of Genitourinary Surgeons, the Clinical Society of Genitourinary Surgeons, and the American Association for Cancer Research.

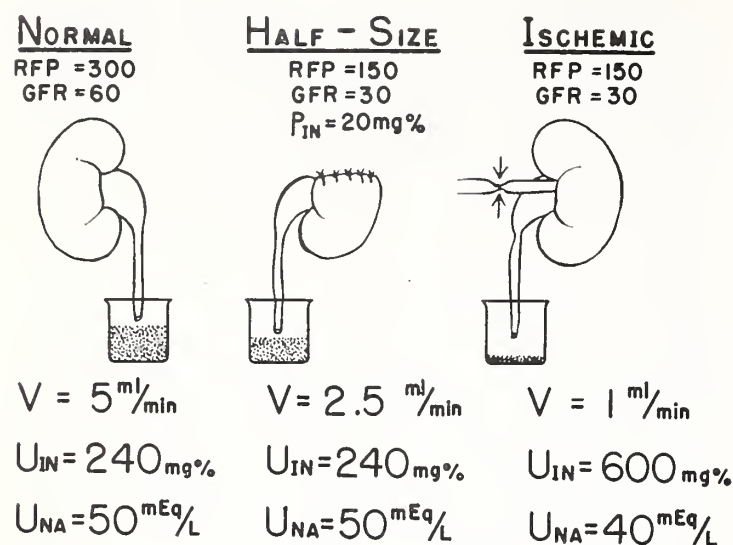


Figure 1. **Functional Characteristics of Ischemic and Non-ischemic Kidneys.** A heminephrectomized kidney excretes urine of identical composition as its normal mate. Any disease other than ischemia which reduces renal blood flow will yield similar values. The ischemic kidney, however, with a comparable reduction in renal blood flow, excretes far less urine, with a much higher inulin concentration. Sodium concentration may be reduced in severe degrees of ischemia.

To determine this excessive reabsorption clinically, it is necessary to measure the concentration of a substance which enters the urine in the proximal nephron in equal concentration on both the normal and diseased sides, and which is not reabsorbed during the transit down the tube. Inulin, creatinine and para-aminohippurate (PAH) all have

these properties. To illustrate, figure 2 demonstrates the situation encountered when an ischemic kidney has a 40 per cent reduction in renal plasma flow relative to its normal mate. If the normal kidney excretes 100 ml of urine in a given time period, we would expect the kidney with a 40 per cent reduction in renal plasma flow to excrete 60 ml, and this would be true of any disease except ischemia. The ischemic kidney, however, will excrete only 20 mls. The extra 40 mls represent the additional water reabsorbed because of the ischemia. Now, since PAH, inulin or creatinine is introduced into the proximal nephron on both sides in equal concentrations, and is *not* reabsorbed during its transit down the tubule, it follows that its concentration in the final urine must be increased on the ischemic relative to the normal side. This increased concentration reflects the fact that the ischemic kidney has acted differently on the tubular urine than the normal kidney by reabsorbing a greater proportion of salt and water; hence, the PAH or creatinine or inulin must be contained in a relatively smaller volume, yielding a higher concentration. Ischemia is the only condition that will cause this. Though other diseases will result in lower urine flow rates, the concentration of these substances will be equal to or perhaps less than that on the normal side.

Of course, the mechanism involved is the active reabsorption of salt and the passive diffusion of water across the tubule. In the proximal tubule this process occurs isosmotically with plasma; hence the excessive salt reabsorption of the ischemic kidney need not be accompanied by water, resulting in a decreased concentration of sodium in the final urine. However, because the proximal or isosmotic process accounts for 80 per cent of the total salt reabsorption and the distal or non-isosmotic for only 20 per cent, only the more severe degrees of ischemia will result in detectable decreases in sodium concentration. The PAH, inulin or creatinine concentration, however, reflects reabsorption of water in both the proximal and distal parts of the nephron and hence is a more sensitive indicator of excessive water reabsorption.

This, then, is the physiological basis on which the use of differential renal function studies is founded. A detailed description

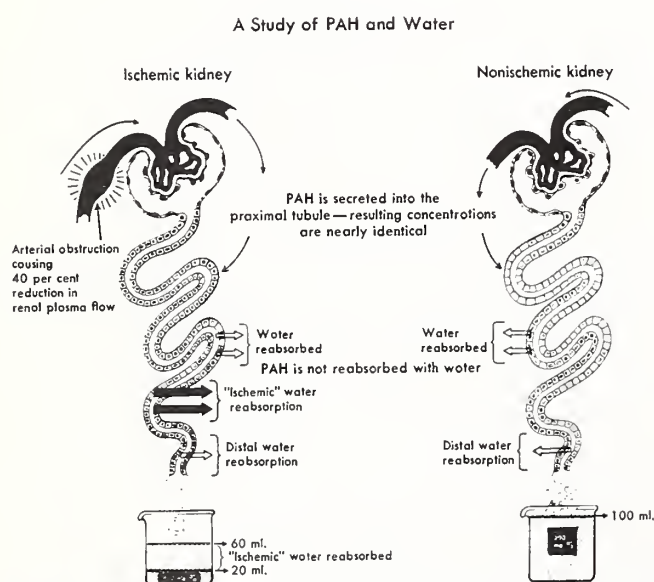


FIGURE 1. Diagram illustrating the functional lesion characteristic of renal ischemia and the method of comparative measurement of reabsorption of water in the two kidneys for the diagnosis of curable unilateral renovascular hypertension.

Figure 2. (Reproduced in its entirety from an article entitled, The diagnosis of curable renal hypertension by ureteral catheterization, by Thomas A. Stamey. Postgraduate Medicine, 29: 496, 1961.)

of the technique developed by Stamey^{14, 15} appears elsewhere. The salient features of this method which ensure reliable, reproducible results, revolve around the strict adherence to proper technique, the use of large bore polyethylene catheters and the infusion of urea. The use of No. 8 F. polyethylene catheters minimizes leakage around the catheters, even when the diuresis exceeds 20 ml/min. The use of urea has three advantages: 1) Most important, it enhances the disparity between the two kidneys in unilateral ischemia, by ensuring adequate medullary urea concentration. Because of the reduced renal blood flow, an ischemic kidney may not have sufficient quantities of urea presented to it for maximal water reabsorption. 2) As an osmotic diuretic, urea ensures adequate urine output. It has been shown that flow rates of at least two ml/min are necessary for reproducible results. 3) The resulting diuresis helps to minimize the chance of infection or anuria in the post-catheterization period.

Using this technique it is possible to obtain meaningful results in virtually every patient. The criteria for a successful test are: 1) Flow rates must be two ml/min or better from each kidney. Flow rates less than this are associated with a large dead space error. 2) The first collection must

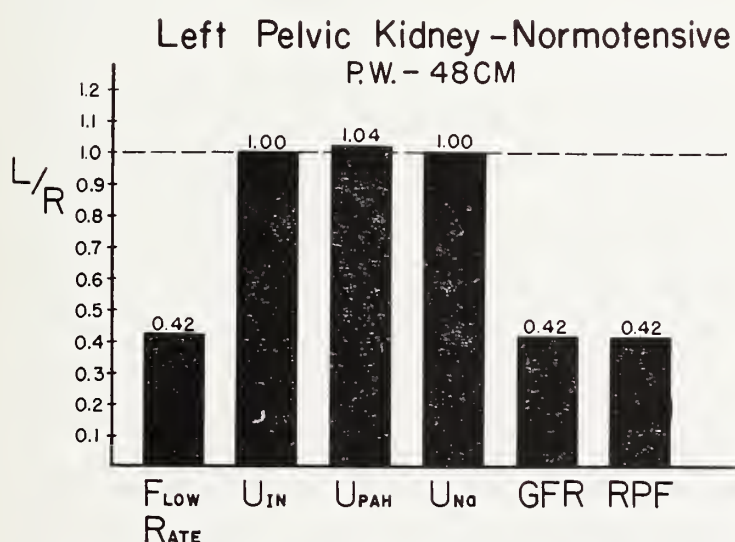


Figure 3. Normotensive Renal Disease. This bar graph represents the ratio value of the diseased left to the normal right kidney for flow rate, urine inulin, PAH, and sodium concentrations, glomerular filtration rate, and renal plasma flow. The dotted line indicates identical values from each kidney. Note that the decrease in urine flow rate is proportional to the decrease in renal plasma flow and glomerular filtration rate. Hence, the PAH, inulin, and sodium concentration are equal on both sides.

Right Main Renal Artery Lesion
J.B.-12 WF

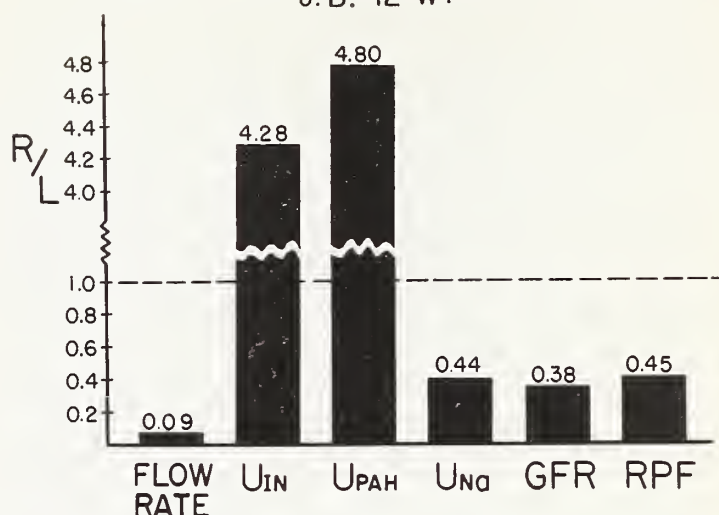


Figure 4. Main Renal Artery Stenosis. This bar graph represents the ratio values in the ischemic compared with the non-ischemic kidney. Note the disproportionately great decrease in urine flow rates and the striking increase in urine PAH and inulin concentrations characteristic of main renal artery lesions. Because of the degree of ischemia, the sodium concentration is measurably decreased.

begin no less than 15 minutes after placement of the catheters, to allow time for the uretero-renal reflexes to resolve. 3) At least three consecutive ten minute collections must be made, and the ratio of urine flow rates (flow rate of the ischemic kidney divided by its mate) should agree within plus or minus five per cent in all three periods. The ratio of the other modalities tested should also agree closely in all three periods. No interpretation should be attempted on a single, isolated period, and none should be made if the ratios do not agree this closely.

Patients so studied have fallen into several groups. Figure 3 presents the results from a normotensive patient with a decrease in renal plasma flow due to a congenitally small, pelvic kidney and is representative of patients with unilateral renal disease other than ischemia. The left kidney has a 58 per cent decrease in renal plasma flow as measured by PAH clearance, and exhibits a proportional decrease of 58 per cent in urine flow rates. Because no excessive salt and water reabsorption has occurred, the concentration of inulin, PAH, and sodium are equal on the two sides.

Figure 4 represents a patient with a main renal artery stenosis, whose hypertension was cured by renal artery surgery. The 55 per cent reduction in renal plasma flow is

accompanied by a disproportionately great 91 per cent decrease in urine flow rate. There has been excessive water reabsorption, and hence the concentrations of inulin and PAH are greatly increased on the ischemic side. Because of the degree of ischemia, excess sodium reabsorption has occurred in the distal tubule, leading to a decrease in the sodium concentration as well.

A lesion in a segmental artery of the kidney yields less striking results as is shown in figure 5. These data are from a patient whose hypertension was caused by segmental ischemia and who was cured by nephrectomy. There has been a 39 per cent decrease in renal plasma flow with a 52 per cent decrease in urine flow rate. The increase in PAH and inulin concentration is not nearly so striking as in the previous patient, and the sodium concentrations are nearly equal.

Patients with so-called essential hypertension fall into two categories—those with and those without renal damage. Those with normal kidneys will show essentially equal function on both sides. Those who have suffered some measure of renal damage as a result of their hypertension may show some disparity, but the difference between the two sides is usually less than that seen with curable renovascular hypertension.

In general we have found that it is necessary to have at least a 40 per cent reduction

in urine flow rate and a 20 per cent increase in the concentration of PAH, inulin or creatinine in order to expect surgery to be of benefit. Sodium concentration may or may not be decreased depending on the severity of the ischemia.

Hypertension as a disease implies more than merely an elevated blood pressure. To subject a patient to extensive diagnostic procedures or to surgical intervention seems unwarranted if conservative medical therapy is adequate to control a mild, asymptomatic hypertension. Excretory urography and isotope procedures are useful in these cases as screening tests and as baseline studies for future reference, but aortography and differential renal function studies should be performed only when indicated in symptomatic patients.

The following criteria for selecting patients for extensive investigation have been found useful: 1) Patients whose hypertension has had its onset under the age of thirty, 2) Patients with a recent onset of hypertension or a recent or abrupt increase in the degree of hypertension, 3) Patients with malignant hypertension at any age, 4) Patients who show a discrepancy in renal size or function on urography or isotope studies, and 5) Patients who give a history suggestive of renal insult.

SUMMARY

Because of the development of improved diagnostic techniques, it is now possible to expect 80 per cent of selected patients to benefit from renal or renal artery surgery. In addition, these more sensitive techniques allow discovery of previously unrecognized cases of curable renovascular hypertension.

Some of the more useful techniques include 1) The intravenous pyelogram. 2) The radioactive renogram and renal scintiscan. 3) Angiotensin blood level determinations. 4) Aortography, and 5) Differential renal function studies.

The prime functional characteristic of the ischemic kidney causing hypertension is the excessive reabsorption of salt and water. The concentration in the final urine of a non-reabsorbable substance such as PAH, inulin or creatinine gives a measure of the degree of this reabsorption. Surgery has been found to benefit those patients with at least a 40

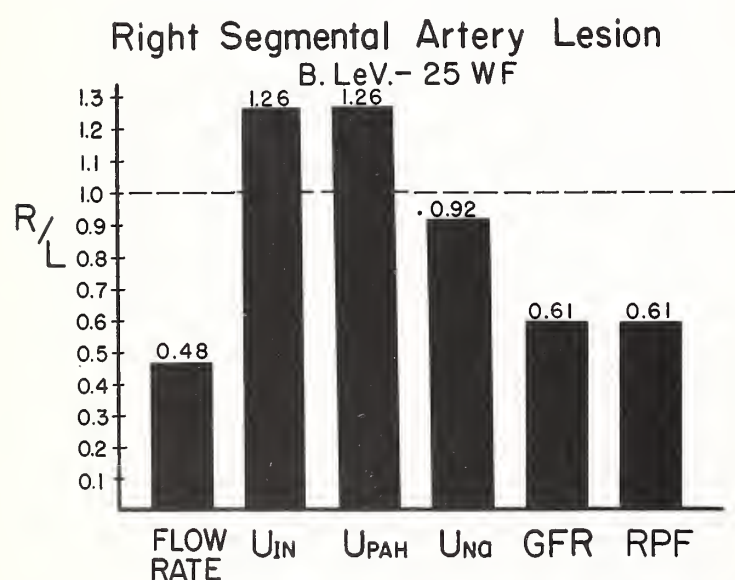


Figure 5. **Segmental Renal Artery Disease.** This bar graph represents the situation which obtains in segmental artery disease. Excessive salt and water reabsorption have resulted in a decreased urine flow rate and an increased concentration of PAH and inulin. Sodium concentrations are not significantly decreased.

per cent reduction in the urine flow rate accompanied by at least a 20 per cent increase in the concentration of PAH, inulin or creatinine from the ischemic kidney.

Extensive diagnostic procedures should be reserved for patients selected by definite criteria. ☐

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The Johns Hopkins Hospital, Baltimore, Maryland

TULSA DISTRIBUTES \$90,000 POLIO "PROFITS"

Tulsa County charitable and educational organizations received unexpected windfalls on June 27th when the Tulsa County Medical Society distributed \$90,000 to 21 such local organizations. The money represented surplus donations (25c each) made by Tulsa's citizens to the six public polio vaccination clinics held during recent months under the direction and sponsorship of the medical group.

An awards dinner was held by the medical society at Tulsa's Mayo Hotel for the purpose of presenting the financial gifts as well as appreciation plaques to 42 organizations and firms and to 60 individuals.

The largest grant was a \$30,000 amount set aside to create the Tulsa County Medical Society Scholarship Trust Fund, a separate and legal trust fund which will be used to provide scholarships and guarantee loans to Tulsa County students in medicine, nursing, pharmacy, and the allied medical sciences. Using the loan guarantee principle, the funds are expected to provide in excess of \$400,000 in guaranteed loans for Tulsa County students.

Other financial awards, presented in behalf of cooperating news media, business firms and organizations, were as follows: \$10,000 to the Meredith M. Black Memorial Scholarship Fund; \$5,000 to the Tulsa Educational Memorial Trust Foundation; \$6,500 to Children's Medical Center; \$5,000 to the Salvation Army; \$1,000 to the Tulsa Boys Home; \$1,500 to the Boy Scouts; \$1,500 to the Girl Scouts; \$1,500 to the Camp Fire Girls; \$2,000 to the Tulsa Tribune Send-A-Kid-To-Camp Fund; \$2,000 to the University of Tulsa Journalism Department Scholarship Fund; \$1,500 to the Hutcherson Branch of the YMCA; \$500 to the Dunbar Day Nursery; \$2,000 to the Tulsa Police Department Retirement and Pension Program; \$2,000 to the Tulsa Police Academy Fund; \$1,500 to the Tulsa Chapter of the National Foundation; \$500 to the Oklahoma Medical Auxiliary Nurses Loan Fund; \$6,500 to the Red Cross Regional Blood Center; \$5,000 to the Tulsa City-County Library; \$2,500 to AMA Education and Research Foundation. ☐

External Synchronized Electric Countershock for Ventricular Tachycardia

CHARLES W. CATHEY, M.D.*

An ectopic arrhythmia, unresponsive to usual drugs, was successfully terminated by synchronized electric countershock.

ANTIARRHYTHMIC DRUGS such as quinidine and procaine amide have demonstrated their effectiveness in terminating cardiac arrhythmia. Frequently, however, they do not terminate the arrhythmia promptly and may be associated with lowered peripheral resistance, depressed cardiac contractility and excitability, and prolonged atrioventricular and intraventricular conduction.¹ At times, an ectopic arrhythmia is unresponsive to all drugs, even when given in massive doses.

Electric countershock applied to the closed chest has been successful in the termination of ventricular fibrillation, ventricular tachycardia, atrial flutter, and atrial fibrillation.^{2, 5}

This case is presented to demonstrate the effectiveness of synchronized D-C external electric countershock in terminating an arrhythmia after large doses of several antiarrhythmic drugs.

REPORT OF A CASE

A 46-year-old male was admitted to Wesley Hospital Foundation January 11, 1963. He had noted the onset of severe substernal pain, with radiation into both arms, while watching television on January 10, 1963. This was associated with sweating, nausea

and vomiting. The pain persisted until relieved by intravenous morphine sulfate two hours later.

The physical examination on admission to the hospital revealed a blood pressure of 140/80 mm. Hg. and a sinus tachycardia of 110 per minute. The initial regimen consisted of oxygen, morphine sulfate, Heparin, warfarin and bed-rest. The electrocardiogram revealed an inferoseptal myocardial infarction. He had recurrent chest pain during the initial three days of hospitalization. Pulmonary edema developed on the third hospital day and responded to morphine sulfate, oxygen, digitalis and diuretics. The patient was discharged on February 6, 1963. Digoxin, warfarin and restricted activity were continued.

Recurrent ventricular premature contractions were noted on March 1, 1963, but responded readily to quinidine sulfate. However, he developed ventricular tachycardia on March 12, 1963. Conversion to a sinus rhythm was accomplished in the hospital after increased doses of quinidine sulfate and digitalis. He was then discharged on March 16, 1963 taking digitalis and warfarin.

The patient was re-admitted one week later, because of recurrent ventricular tachycardia. Digitalis was discontinued and quinidine sulfate was given with conversion to a sinus rhythm. Quinidine sulfate and warfarin were continued on discharge. Within four days cardiac decompensation developed and digitalization was reinstituted. Quinidine sulfate each six hours was maintained.

On April 11, 1963 ventricular tachycardia recurred. This responded on April 13, 1963 to increased quinidine sulfate dosage. Digitalis and warfarin were continued.

*From the Medical Department, Oklahoma City Clinic.

On April 22, 1963 the ventricular tachycardia again recurred. Quinidine sulfate, 0.2 gm. each two hours, for five doses was ineffective in converting the arrhythmia. The dosage was doubled without beneficial effect. At this time the patient was complaining of progressive weakness, shortness of breath, intermittent substernal pain and was apprehensive. The physical examination revealed a blood pressure of 110/70 and a pulse rate of 160 per minute. Oral procaine amide, 500 mg. each four hours, was tried without success. Potassium chloride intravenously and orally was without noticeable effect. Procaine amide, one gram, was given intravenously over a 30-minute period without conversion. All medications, other than warfarin, were then discontinued for five days. Then procaine amide, 1.5 gm. was given intravenously over a 25-minute period. The patient's condition progressively deteriorated.

Thirteen days after the onset of the last episode of ventricular tachycardia, the patient was taken to the operating room and given 250 mg. thiopental sodium and 0.4 mgm. atropine sulfate, intravenously. A single 100-watt-second synchronized discharge* resulted in the immediate restoration of a regular sinus rhythm (figure 1). The patient was started on maintenance quinidine sulfate therapy and warfarin was continued.

DISCUSSION

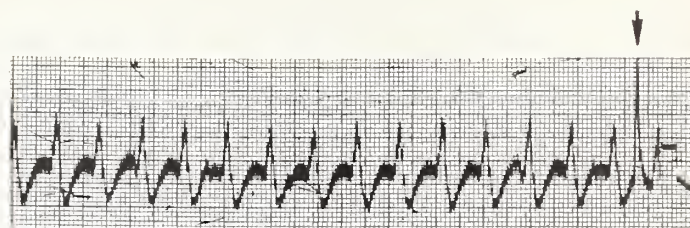
Heretofore, ectopic arrhythmias refractory to the usual pharmacologic agents were

*A Corbin-Farnsworth synchronized capacitor-discharge D-C defibrillator was used.

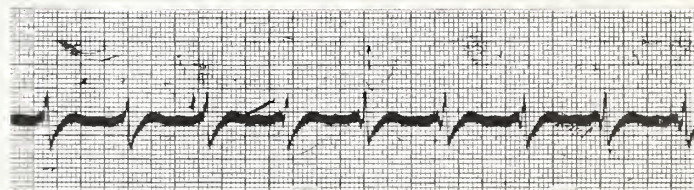
Charles W. Cathey, M.D., graduated from the University of Oklahoma School of Medicine where he is now Instructor in Medicine. In addition to his private practice, he is Chairman of the Intern-Resident Training Program at Wesley Hospital Foundation.

Doctor Cathey is certified by the American Board of Internal Medicine, an Associate of the American College of Physicians, an Associate Fellow of the American College of Cardiology and a member of the Alpha Omega Alpha.

Synchronized Discharge



30 sec. After Synchronized Discharge



Two Minutes

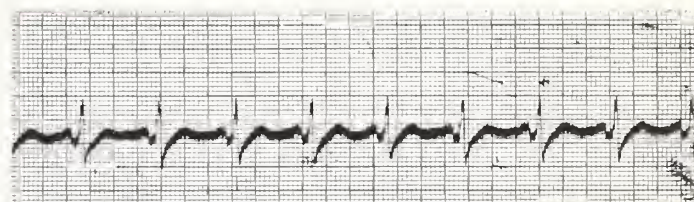


Figure 1. Patient with ventricular tachycardia. Single synchronized capacitor discharge of 100-watt seconds restored a sinus rhythm.

fatal in most cases. It is suggested thus far that synchronized cardiac depolarization is an excellent method for terminating selected cardiac arrhythmias. It is simple to employ and results are immediate.

SUMMARY AND CONCLUSIONS

A case is presented to show the success of synchronized D-C external electric countershock in persistent ventricular tachycardia after drug failure. The clinician should give serious consideration to this method of terminating intractable cardiac arrhythmias in selected patients who have been unresponsive to adequate drug therapy. □

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301 N.W. 12th, Oklahoma City, Oklahoma

SIALOGRAPHY

DAN MITCHELL, JR., M.D.

Rediscovery of an often forgotten and little used valuable radiographic examination.

Sialography is the opacification of the ductal system of the salivary glands by retrograde injection of a contrast medium. Radiographs are made and the opacified ductal system can be studied in detail.

Our experience with this examination has been gratifying. It has solved many perplexing clinical problems in which swelling of one of the salivary glands was a major finding. Chronic inflammatory diseases, neoplastic invasions or tumor formations within the gland can be differentiated with the aid of sialography.

Little has been written concerning recent advances in x-ray study of the salivary glands. It is the purpose of this paper to describe and discuss the techniques used in performing this examination. The various diseases which affect the major salivary glands and their radiographic findings also will be covered briefly.

ANATOMY

Three structures make up the major salivary glands. The largest is the parotid gland

in the retromandibular fossa. The superficial surface of this gland is located subcutaneously. Superiorly, it extends to the zygomatic arch, anteriorly to the ramus of the masseter muscle and posteriorly to the external auditory canal. Stensen's duct leaves the anterior border of the gland, passes laterally to the masseter muscle, turns medially to pierce the buccinator and opens into the oral cavity at the crest of the papilla just lateral to the upper third molar. The submaxillary gland lies in the submandibular triangle at the inner aspect of the angle of the mandible. The bulk of this gland is superficial to the mylohyoid muscle. Wharton's duct, draining the submaxillary gland, courses forward inferiorly at first, then medially to the sublingual gland and opens at the sublingual caruncle on either side of the frenulum of the tongue. The sublingual gland lies within the sublingual fold just below the mucosa. There are approximately 12 ducts leaving the superior aspect of the gland and each opens individually in the oral cavity. It can be seen that this gland does not lend itself well to radiographic examination.

Some comments regarding the anatomy of the ductal system should be made. The first branches of the main duct are called interlobar ducts. Branching from the interlobar ducts are the interlobular ducts, followed by the intralobular ducts which branch into the intercalary ducts. The intercalary ducts communicate with the intra-cellular secretory canals.

There are two basic techniques used today for injecting contrast material into the ductal system of the major salivary glands. The open technique consists of introducing a blunt needle into the orifice of the parotid or submandibular gland and injecting an oily contrast medium. This is the most convenient of the two methods but it has serious drawbacks. Prior to the radiograph, the needle is withdrawn from the duct, thus allowing escape of the contrast material from the ductal system into the oral cavity. As a result the ductal system may be only partially visualized and pooling of contrast material in the oral cavity may obscure a portion of the ductal system. In order to compensate for this loss of contrast material there is a tendency to over-inject. After acinar and alveolar filling has occurred the contrast material remains in the interstices of the gland obscuring that part desired to be visualized. Many times the retention of oily material within the parenchyma of the gland produces an undesirable foreign body reaction.

In 1959, Ruben, Blatt, Holt and Maxwell described a closed system for visualization of the salivary ducts.⁵ This system consists of cannulating Stensen's or Wharton's duct with a small polyethylene tube, injecting contrast material to a specific end point and closing the end of the tube with a toothpick. In this way radiographic examinations do not require over-filling the gland and there is no leakage of contrast material into the oral cavity. Another important addition to the examination is the use of post-evacuation films.^{5, 6} With suitable stimulation, all residual contrast material in a properly opacified gland can be eliminated within five minutes. As part of our routine examination, salivary secretory activity is stimulated and post-evacuation films are obtained twenty-five to thirty minutes after completing the filled portion of the examination. This has led to better understanding of the pathological processes involved.

The most important factor in the success or failure of a sialographic examination is the amount of contrast material to be injected into the gland. The patient experiences discomfort during cannulation of the duct and during the early phase of injecting the

contrast material. Ruben, *et al*, found that if the injection of contrast material is stopped when the patient experiences real pain that this represents the optimum amount of contrast material. At this point opacification of the entire ductal system, with very minimal acinar staining, has occurred. No pre-calculated amount of contrast material should be used; the amount should be limited by the production of pain. In our experienced satisfactory sialograms have been obtained usually with injection of less than 0.5cc. of contrast material. The largest quantity injected has been 0.75cc.

The contrast material used most successfully has been Pantopaque.[®]

CLINICAL APPLICATION

For this discussion the various diseases of the salivary glands are grouped according to their radiographic findings.

CHRONIC OBSTRUCTIVE SIALODOCHYECTASIS

The basic radiographic findings consist of a stricture or obstruction with dilatation proximal to the obstruction. These changes are usually limited to the main duct, interlobar duct and interlobular ducts. The peripheral ducts are spared and empty completely on the post-evacuation films. Residual contrast material may be seen in the main duct proximal to the site of obstruction.

Calculi: Both opaque and non-opaque calculi occur in the salivary glands. Those calculi which are 3 mm. or less in diameter are rarely large enough to produce obstruction. In most series the majority of salivary calculi occur in the submaxillary gland.⁶ Symptoms are usually pain and swelling in a single salivary gland associated with eating. Infection is quite common and if the process is untreated, glandular atrophy and abscess formation may occur.

Frequently opaque salivary stones are seen on preliminary survey films. Following the injection of contrast material, dilatation

Since graduating from the University of Oklahoma School of Medicine in 1958, Dan Mitchell, Jr., M.D., has limited his practice to his specialty, radiology. He is associated with the Billings Clinic in Billings, Montana.

of the ductal system is noted proximal to the site of obstruction. Usually this dilatation is confined, especially in acute cases, to the major branches of the ductal system sparing the more peripheral structures. Salivary stones may be non-opaque and thus easily confused with air bubbles introduced during injection. At times this dilemma can be resolved on post-evacuation films. The exit of contrast material from the ductal system is obstructed and the non-opaque defect will be seen near the area of stenosis. Even if there is complete evacuation of the contrast material it often remains in contact with a non-opaque stone giving it an opaque rim.

Strictures: In our experience this is the most common cause of chronic obstructive sialodochyectasis. Strictures at the opening of Stensen's or Wharton's duct are usually secondary to ill-fitting dentures. Occasionally strictures occur as a sequel to mucositis (figure 1).

CHRONIC NON-OBSTRUCTIVE SIALODOCHYECTASIS

In this group of disorders the common radiographic findings consist of sialectasis. Sialectasis produces a mulberry pattern by the collection of small amounts of contrast material in the dilated acini distributed

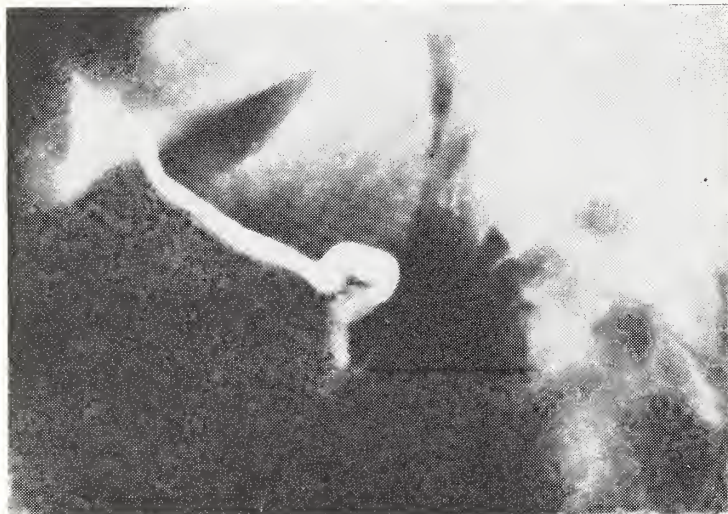


Figure 1. This 54-year-old white female had a sudden onset of swelling of the left submaxillary gland. She had worn ill fitting dentures for 15 years. Sialography showed dilatation of the main duct while the peripheral ducts remained normal. During the procedure a stricture at the orifice of the gland was dilated and evacuation of the contrast material was complete and prompt. After this procedure the submaxillary gland swelling regressed and the patient became asymptomatic.



Figure 2. This 45-year-old white female had frequent episodes of swelling of her right parotid gland associated with a purulent exudate. Sialography demonstrated typical sialectasis associated with recurrent pyogenic parotitis.

through the gland. The main ducts and the secondary (interlobar and interlobular) ducts may be of normal caliber and apparently uninvolved. On post-evacuation films contrast material remains within the small dilated acini and intercalary ducts. When the collections are one mm. or less in diameter they are designated as punctate; globular when they are one to two mm. in diameter; and cavitary when there is coalescence of the globules. Destruction of the gland many follow and simulate neoplastic invasion. The differential diagnosis can be made by the presence of the sialectasis in the other salivary glands in which the disease may be less advanced.

Recurrent Pyogenic Parotitis in Adults: This usually occurs in women during the fourth and fifth decades. It is characterized by frequent remissions and exacerbations. During exacerbations there is often an elevation of temperature. When pressure is applied over the gland purulent material exudes from the orifice of the duct. *Streptococcus viridans* is a common bacterial invader. The radiograph shows sialectasis and the diagnosis of recurrent parotitis in the adult is made on the basis of clinical and sialographic findings (figure 2).

Recurrent Sialadenitis in Children: This is an inflammatory disease also characterized by remissions and exacerbations. By the time the child reaches adolescence usually no further difficulty is encountered. The child has fever with a swollen, tense and tender gland. During remissions the gland

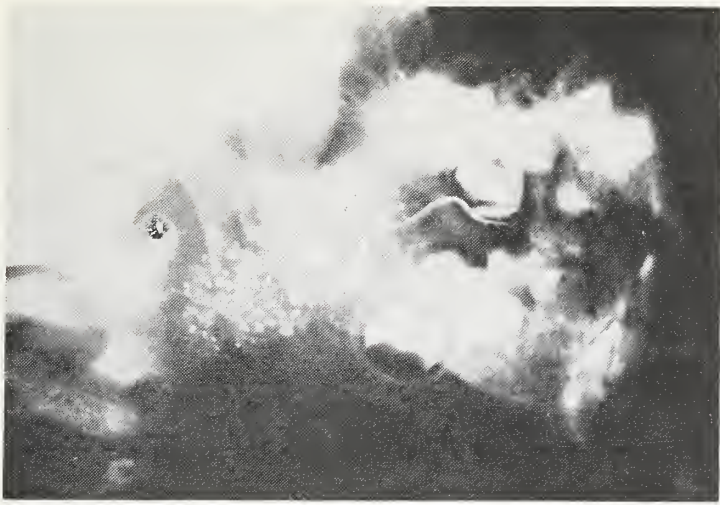


Figure 3. This is an eight-year-old white male with recurrent swelling and pain in the left parotid gland. Sialography demonstrates the typical mulberry pattern of recurrent sialadenitis.

is slightly larger than usual and is firm and nodular. Not only is sialography a valuable aid in diagnosis, but it has been noted that prolonged remissions may occur following sialography.⁸ Radiographic findings are those of sialectasis (figure 3).

Mikulicz's Disease: In 1888 Mikulicz described a disease entity consisting of benign, asymptomatic, enlargement of the lacrimal and salivary glands in women during the fourth to the sixth decades.¹ It soon became apparent however that some with "Mikulicz's disease" followed neither a benign nor an asymptomatic course. Considerable confusion followed until 1927, when the distinction between Mikulicz's disease and Mikulicz's syndrome was made.⁷ Mikulicz's syndrome, with swelling of the salivary or lacrimal glands, is usually associated with a far more serious systemic disease such as leukemia. In addition, numerous cases have been reported in which the swelling was unilateral, involving either the lacrimal or salivary gland alone and in which there was no apparent relationship to sex and age.⁴ This has done away with the original restricted concept of painless, symmetrical enlargement of salivary and lacrimal glands as being entirely characteristic of Mikulicz's disease.

Mikulicz's disease then is defined as benign, sometimes asymptomatic swelling of one or all of the salivary or lacrimal glands. The etiology remains obscure although a chronic inflammatory process seems most likely. Microscopically, in the early stages there is periductal lymphocytic infiltration around the interlobar and interlobular ducts.³

It is a self limiting disease without mortality.

Mikulicz's Facies: Mikulicz facies is produced by swelling in the region of the salivary glands. The Mikulicz syndrome includes those apparent salivary and lacrimal gland enlargements which are manifestations of a variety of separate disease entities. Regional lymph node involvement in the area of the salivary and lacrimal glands by such diseases as leukemia, lymphoma, Hodgkin's disease, sarcoid, tuberculosis and syphilis fall into the classification of Mikulicz's syndrome. Later, the salivary gland may be invaded and completely replaced by the primary disease. Radiographically Mikulicz's disease produces a pattern of sialectasis, the degree depending on the stage of the disease process. The gland is enlarged but not displaced. In the early stages of Mikulicz's syndrome the ductal system is not affected and only persistent displacement of the gland is seen. In the terminal stages those findings characteristic of an invasive process appear and finally complete destruction and replacement of the gland develops, preventing the injection of contrast material. In the final stages of Mikulicz's disease almost no resistance is encountered and the gland may be over-injected.

Sicca Syndrome: This syndrome is associated with absent or decreased lacrimation and an associated keratoconjunctivitis, enlargement or atrophy of the parotid gland, dryness of the mouth, nose and throat and chronic rheumatoid arthritis. It is a chronic disease that usually occurs in women over 40 years of age. Recently many other signs and symptoms have been added such as pernicious anemia, achylia, atrophic vaginitis, Raynaud's phenomenon, purpura, alopecia and scleroderma.

In 1953, after a careful review, Morgan and Castleman concluded that Mikulicz's disease is simply a variation of the Sicca syndrome.²

Radiographically the sialectasis is indistinguishable from Mikulicz's disease.

TUMORS

As with any other portion of the human anatomy, tumors either benign or malignant may develop within the parenchyma of the salivary gland. Likewise, the salivary gland may be the site of metastatic disease. When

enlargement of the salivary gland secondary to tumor is suspected, sialography may give insight into the nature of the disease process affecting the gland. By sialography it can be determined whether a tumor is extrinsic or intrinsic. With intrinsic tumors, one may learn whether they are encapsulated or invasive. In general, tumors extrinsic to the salivary gland are benign, although early malignant tumors may appear as extrinsic lesions. They ultimately invade the parenchyma of the gland. Intrinsic tumors which are encapsulated usually are benign. Tumors which produce a sialographic pattern characteristic of an intrinsic, invasive tumor are usually malignant.

Extrinsic tumors: Tumors extrinsic to the salivary gland include lipoma, fibroma, hemangioma, neurofibroma and lymphangioma. These lesions usually produce no abnormalities in the architecture of the salivary gland ductal system. There is seldom evidence of narrowing or localized kinking,

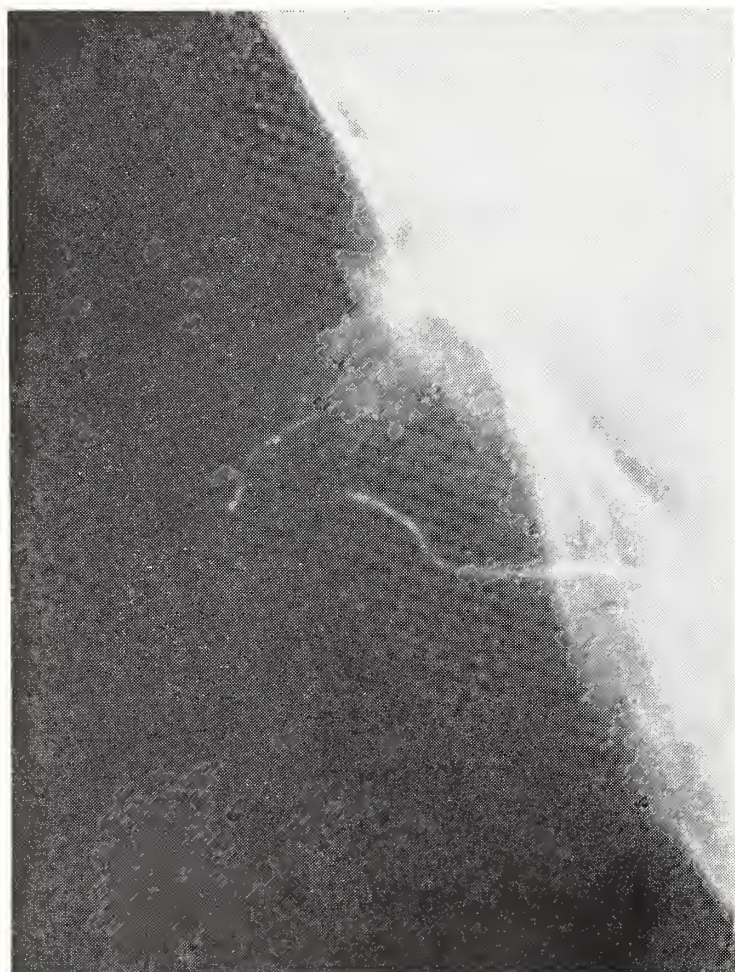


Figure 4. This six-year-old white male had progressive swelling of the left parotid without pain. Sialography demonstrated a mass extrinsic to the parotid gland. At surgery an encapsulated tumor was removed. The final diagnosis was lipoma.



Figure 5. Lateral view of the left parotid gland in a ten-year-old white male with the characteristic radiographic findings of an intrinsic, invasive tumor. The diagnosis was fibrosarcoma.

rather there is a generalized displacement of the gland. Although portions of the gland may be compressed, on the post evacuation film the contrast material is readily and completely excreted from the gland which remains normal otherwise (figure 4).

Intrinsic and Encapsulated Tumors: Intrinsic and encapsulated tumors which are benign include Wharton's tumor, mixed tumors and tumors arising from acinar tissue. On sialography a filling defect is outlined by the displacement of the ductal system. Frequently on the post evacuation study, areas of retained contrast material are noted within the ductal system secondary to compression.

Intrinsic Invasive: Tumors which fall in this category include mucoepidermoid carcinoma, squamous cell carcinoma, cylindroma, liposarcoma, fibrosarcoma and metastases. Radiographically, these tumors produce generalized disruption of the architecture of the ductal system. There are bizarre areas of puddling with alternating areas of narrowing and dilatation. The most characteristic radiographic finding is the abrupt cutoff or so called amputation of a peripheral duct. There is also inconsistent filling with visualization of the main duct, some of its main branches and the peripheral ductal system without evidence of contrast material in the intermediate ducts (figure 5).

SUMMARY AND CONCLUSIONS

Sialographic technique has been reviewed and the method currently employed by the

author has been described. The advantages of the closed system over the open method have been discussed. The diseases which affect the salivary gland and their sialographic characteristics have been described.

Since interest has been renewed in this examination it has proved a very rewarding diagnostic aid. In many instances it has permitted a prompt and accurate diagnosis thereby improving care of the patient. It is believed that this examination could be applied to advantage in a greater number of cases. It is not technically difficult to perform and it is not time-consuming. □

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P.O. Box 2555, Billings, Montana

HIGHLIGHTS OF THE 112th ANNUAL MEETING, AMA

The 1963 annual meeting of the American Medical Association held in Atlantic City, June 16-20, attracted 12,924 physicians. Among the policy decisions made by the AMA House of Delegates were the following:

- Amendments to the Constitution and Bylaws enlarged the Board of Trustees from 11 members to 15, and decreased the term of office to three years and the maximum number of successive terms to three.

- Delegates disapproved a recommendation to place financial responsibility for the compensation of interns and residents upon the attending staff of teaching hospitals.

- A new AMA Institute for Biomedical Research was created upon the recommendation of the AMA Education and Research Foundation. The institute will concern itself with intensive and fundamental study of life processes, particularly as related to intracellular mechanisms. No federal funds are involved, assuring complete freedom for the basic research.

- The House approved establishment of tax-deferred AMA physicians' pension plan under the provision of the Self-Employed Individuals' Retirement Act of 1962, to begin in 1963.

- Action was deferred on a study of the

relationship between tobacco and disease, pending the results of a study being made by the U.S. Public Health Service.

- AMA participation in a Joint Commission on Medicine and Pharmacy was approved. However, no strong position was taken on the ethical aspects of physician owned pharmacies, so long as there is "no exploitation of the patient" or profit motive.

- "Operation Hometown," the AMA's grass roots plan to defeat H.R. 3920 was heartily endorsed for implementation by county medical societies.

- Federal funds for staffing community mental health centers were opposed by the Delegates.

- The House declined to take an official position on the "Liberty Amendment" but agreed to call it to the attention of individual physicians. The measure calls for the repeal of personal income taxes and concomitant reduction in federal spending.

- Opposition to federal loans for medical students was expressed.

- Medical societies in the vicinity of medical schools were urged to establish clear lines of communications with the students. □

HYPERCALCEMIA

PART I*

J. H. FOERTSCH, M.D.

A review of the literature indicates that hypercalcemia occurs more frequently than one suspects. The criteria for diagnosis are well established; however, detecting its clinical presence and determining its cause oft times taxes the skill of the most astute.

HISTORY—PAST AND PRESENT

CLINICAL IDENTIFICATION of the various hypercalcemic states necessarily originates from the anatomical identification and physiological knowledge accumulated from studies of the parathyroid glands.

In 1880 Ivar Sandström gave the first anatomical description of the parathyroid glands. Gley, in 1881, demonstrated tetany following removal of the parathyroids. Nine years later, von Recklinghausen described a bone disease which he felt was primarily osseous in origin and termed this pathological state "Osteitis Fibrosa Cystica." In retrospect, it appears that these cases probably represented the classical bone changes of long-standing, severe, hyperparathyroidism.

Erdheim, in 1906, pointed out the relation between calcium metabolism and the function of the parathyroid glands. The original experiments of MacCallum and Voegtlin in 1908 proved that tetany occurring in parathyroidectomized animals was caused by a low serum calcium and was ameliorated by intravenous injections of soluble calcium salts.^{1, 2}

In 1924, Felix Mandl in Vienna successfully removed a parathyroid adenoma in a patient suffering from generalized Osteitis Fibrosa Cystica. Albright³ also described the first diagnosis and study of a patient with primary hyperparathyroidism by DuBois in this country and states that both of these patients had such extreme bone involvement that the skeletal structure was almost a gelatinous mass. As clinical observations continued and data relative to the clinical picture of hyperparathyroidism accumulated, there evolved an impression that bone disease was a primary manifestation of hyperparathyroidism. As observations were extended, parathyroid over-function was soon found to be associated with hypercalcemia, hypophosphatemia and hypercalciuria and the acceptance of a diagnosis was limited to these criteria.

In 1924 and 1925 Hanson and Collip further substantiated and amplified the work of Gley and Erdheim by preparing an extract of the parathyroid glands which contained an active principle of the parathyroid hor-

*Part II of Hypercalcemia will appear in the August issue of The Journal.

mone. They demonstrated elevation of the serum calcium following injection of this hormone and ensuing animal studies tended to substantiate the presence of hypercalcemia, hypophosphatemia and the hypercalciuria as was reported in the earlier observations of hyperparathyroid activity in man.

Later it was realized that bone lesions need not necessarily be present in hyperparathyroidism, and the importance of nephrolithiasis was recognized so that many cases of parathyroid over-activity were diagnosed from the incentive projecting from the observations made in renal calcinosis. Further modifications in the criteria for the diagnosis of hyperparathyroid activity unfolded through the years so that it is now accepted that some patients have hyperparathyroidism without nephrolithiasis or bone disease and, more importantly, present only minimal chemical abnormalities.⁴ It is now known that although an elevated serum calcium is still the most important single laboratory finding in this disease, the degree of elevation may be only slight.⁵

About 1928 it became apparent that there existed clinical states of hypercalcemia with no evidence of over-activity of the parathyroid glands. Hess and Lewis (1928) described the occurrence of hypercalcemia and hypercalciuria in patients given large amounts of Vitamin D⁶. In 1929, Aub⁷ and his associates reported a case of hyperfunction of the thyroid gland which was associated with hypercalcemia and increased excretion of calcium and phosphorus in the urine. Since this time there have been numerous case reports of elevated serum calcium occurring in hyperthyroidism and the presence of hypercalcemia has been documented in 19 cases.⁸

The diagnostic differentiation between hypercalcemia resulting from parathyroid over-function and hypercalcemia resulting from other etiologic factors progressed gradually. By 1934, the classical picture of hyperparathyroidism was well-defined,⁹ and by 1955 about 750 cases of hyperparathyroidism had been reported in the literature, 97 per cent to 98 per cent of whom had either bone or kidney complications or both.¹⁰

In 1949, Albright and Reifstein presented a list of the most common clinical causes of hypercalcemia.¹¹ This list is presented in table one, as amended by Huth.

TABLE ONE

1. Primary hyperparathyroidism
2. Sarcoidosis
3. Hyperthyroidism*
4. Neoplasm with skeletal lesions
5. Neoplasm without skeletal lesions*
6. Immobilization with, for example:
 - (a) Paget's Disease
 - (b) Paralytic poliomyelitis
7. Vitamin D intoxication
8. Milk-Alkali Syndrome
9. "Laboratory error"

*Hyperthyroidism and neoplasm without skeletal lesions were not included in the original list of Albright and Reifstein.

As Huth¹² indicates, this original list has grown only by the addition of hyperthyroidism and neoplasm without skeletal lesions. He further indicates that finding the cause of an elevated serum calcium has become an increasingly complicated procedure; for example, recently there has been reported, within the same patient, multiple causes for hypercalcemia such as hyperparathyroidism associated with Paget's Disease,¹³ the case reported by Jackson, *et al.*,¹⁴ and the case reported by Goldberg and his associate, Torack¹⁵ in which a functioning parathyroid adenoma occurred with functioning hyperplasia of the parathyroid glands.

To the above list, we suggest that the following causes of hypercalcemia might be added: The hypercalcemia of infancy;^{16,17, 18} adenomatosis of the endocrine glands;^{19, 20, 21} and the recently reported cases of hypercalcemia due to parathyroid adenoma supervening in circumstances of glomerular failure with stimulation of the parathyroid gland by the elevated serum phosphorus.²²

Nordin²³ reports that he has seen two cases in which all the available evidence suggested that the primary lesion was pyelonephritis, yet a parathyroid adenoma was found at autopsy. He states, "it seems possible, therefore, that continuous stimulation of the parathyroid glands occasionally may lead to independent adenoma formation. These cases differ from the usual type of renal failure with secondary hyperparathyroidism in the very great severity of the Osteitis Fibrosa.

"The diagnosis of primary hyperparathyroidism in the presence of advanced renal failure is extremely difficult, if not impossible, owing to the depression of serum calcium which follows the elevation of serum phosphorus. However, theoretical considera-

tions and actual observations suggest that depression of serum calcium by an elevated serum phosphorus does not occur until the latter has reached a level of about six or seven milligrams per cent. Hypercalcemia due to primary hyperparathyroidism should, therefore, remain detectable until this degree of renal failure has been reached, when it is very unlikely that removal of a parathyroid tumor would modify the course of the disease. The problem, therefore, is somewhat academic."

Since 1928 there has appeared a changing concept regarding the causes of hypercalcemia, taking root from the original demonstration of an elevated serum calcium as related to the over-production of parathyroid hormone. By 1949 other obvious causes had been recognized, as enumerated in the modified listings of Albright and Reifenshtein, and as clinicians became more aware of the multiplicity of disorders capable of producing hypercalcemia, there appeared a parallel increase in the volume of explanations as to the mechanisms involved in producing such a state. These theories and concepts were altered and compounded by the appearance of more than one factor capable of producing an elevated serum calcium which developed simultaneously in one patient.

Today the field of calcium metabolism is once more in the realm of clinical and research interest, so that new concepts, new observations and new data are being fed into the stream of knowledge. Nevertheless, the factual information available still presents huge gaps which are slowly being closed by the accumulated accomplishments resulting from this resurgent interest.

Hypercalcemia is a polymorphic condition occurring in an assortment of benign and malignant states. It is now accepted as a fairly frequent occurrence and is not looked upon as the rare disturbance it was once considered. One wonders about the paucity of reports regarding parathyroid pathology in the literature of the earlier centuries, but a review of autopsy results discloses that frequently the parathyroids were not identified postmortem, for in many cases dissection of the neck in anticipation of possible parathyroid pathology was not done. Major²⁴ in his classic descriptions of disease does not

devote any part of his book to the parathyroids nor to diseases involving calcium imbalance.

It is difficult to find any particular reason for the present revival of interest in the parathyroids and calcium metabolism. Two factors however, are probably most important in the renaissance: namely, the recent demonstration of the presence of parathyroid adenoma in the absence of renal changes and minimal chemical changes as reflected in the serum calcium and serum phosphorous levels, and the recent purification of parathyroid hormone which opened pathways to further advances in knowledge as it permitted the determination of the chemical structure, stimulated attempts to produce a synthetic preparation and opened the way for more definitive studies of the pharmacology and confirmation or rejection of present thoughts concerning action of the hormone upon bone, kidney, and other tissues. In addition, it may present the opportunity to modify or apply new diagnostic procedures and may disclose new therapeutic uses.

SYMPTOMS AND SIGNS OF HYPERCALCEMIA

Although some confusion and variation of thought still exists regarding the mechanisms of the various hypercalcemic states, there is unanimity of opinion regarding the multitude of clinical disorders in which hypercalcemia may appear. Besides hyperparathyroidism, the classic cause of hypercalcemia, one series reported as many as 25 per cent of patients with advanced breast cancer,²⁵ another series of multiple myeloma cases reported an incidence of 40 per cent,²⁶ and 30 per cent of patients with sarcoidosis,^{27, 28} and slightly less than one-third of lung cancer.²⁹

All observers agree that hypercalcemia can be nebulous, tending to escape detection and may well be called the "elusive evil-doer par excellence,"³⁰ but regardless of its origin it is injurious, dangerous and, if unattended, eventually lethal.³¹ As a general rule, the injurious effects of hypercalcemia are prolonged and insidious so that in many instances the patient's symptoms have not yet reached the threshold of awareness. However, on occasion it can constitute a true crisis and precipitate sudden death.

Hypercalcemic crisis is a rare occurrence, Thomas³² reported three cases due to hyperparathyroidism and, as pointed out by Miehler,³³ crises can occur in any disease in which there is marked elevation of the serum calcium. During the crisis abdominal pain, persistent vomiting and marked dehydration occur. Serum calcium values may be as high as 19 or 20 milligrams per cent with phosphorus values of two to three milligrams per cent. Early in the course of the crisis there may be polyuria, but with the advent of dehydration oliguria and azotemia appear; marked muscular weakness and psychic disturbances become prominent features. Rehydration is necessary, and in cases where a parathyroid adenoma is present, surgical removal of the adenoma must be performed immediately.

Since the consequences of hypercalcemia are so formidable and the symptoms so vague and variable, what criteria exist that might arouse the physician's suspicion in any given case? In fact, the rise in the physician's suspicion index is in many instances the necessary antecedent before the diagnosis of hypercalcemia can be made.

The presence of hypercalcemia may be so hazy that Randall and Keating³⁴ speak of "Serendipity" in the diagnosis of hyperparathyroidism, implying that the condition is frequently discovered accidentally.

GENERAL SYMPTOMS

Generally, one might become alerted by histories of weakness, weight loss, vague aches or stiffness in the joints and muscles, obscurely described by the patient and tending to make the physician label such individuals as "neurotic."³⁵ One should be particularly alert if the past history indicates

a stable personality, who for no apparent environmental reason develops roving, general, indefinite symptoms. Keep in mind that the general symptoms may extend over a period of years; the important fact being the transplanting of symptoms to a formerly stable individual.

RENAL CLUES

All patients with renal stones or a past history of renal colic, especially if stones were passed and found to be composed of calcium and phosphorus, should be thoroughly investigated. A review of patients attending a stone clinic, revealed an incidence of 16 per cent hypercalcemia.³⁶ In addition, all cases of polyuria should be checked for possible hypercalciuria and/or hypercalcemia. Occasionally, calcium casts are found on urine analysis, and this would indeed be a valuable clue.

SKELETAL MANIFESTATIONS

This includes a very large group of patients, more women than men, in whom the ubiquitous radiological finding of osteoporosis demands concerted investigation as to etiology, because osteoporosis is merely a finding and in itself not a diagnosis. All x-ray changes showing non-specific demineralization of the bone with or without pain, all cases of spontaneous fractures, bone swelling, evidences of neoplasm with bone metastases and immobilized individuals, (especially in the first three to four weeks when bone resorption is at its height), such as children with casts or adults with Paget's disease or far-advanced osteoporosis, should be studied diligently.^{37, 38}

GASTRO-INTESTINAL SYMPTOMS

Of particular note are those duodenal ulcer patients who originally follow a medical regime and somehow feel worse. Their symptoms persist and the ulcer becomes intractable.³⁹ More evasive are the large number of patients who present vague digestive symptoms such as dryness of the mouth and throat, anorexia, nausea, vomiting, flatulence, disseminated abdominal pain as well as localized abdominal pain and constipation.

The diagnosis of hypercalcemia in this group is prone to escape, especially after

Since his graduation from the University of Pittsburgh School of Medicine in 1942, J. H. Foertsch, M.D., has been certified by the American Board of Internal Medicine. His practice in Chickasha, Oklahoma is limited to his specialty.

Doctor Foertsch is a Fellow of the American College of Physicians, a member of Alpha Omega Alpha, the Oklahoma Society of Internal Medicine and a member of the Board of Trustees of Blue Cross.

thorough investigation of the G. I. Tract and evaluation of hepatic function fail to reveal intrinsic disease.

NEUROLOGICAL SYMPTOMS

Many hypercalcemic individuals complain of fatigue and in addition may present central nervous symptoms of drowsiness, lethargy (which may advance to coma), confusion, memory loss, personality changes, impaired hearing or overt psychosis.⁴⁰

A state of diagnostic alertness is particularly important in geriatric patients because there is an inclination to attribute neuropsychiatric manifestations of this type to the presence of cerebral arteriosclerosis.

Two other facets of the history remain important and are worthy of note: (1) up to the present time, 28 cases of familial hyperparathyroidism, (excluding cases of multiple adenomatosis), have been recorded in the literature;⁴¹ (2) although infrequent, a history of vitamin D ingestion may provide the key to diagnosis.

SIGNS OF HYPERCALCEMIA

There are no specific pathognomonic physical findings in hypercalcemia. Bone deformities and bone tenderness may be present and incite physician interest. A palpable mass in the neck may be of value, and suggest parathyroid adenoma, but many tumors appear in the neck so that this is non-specific; also, depressed or absent tendon reflexes, atonic or hypertonic muscles are likely signs, but still indecisive and inconclusive. Perhaps one of the most valuable physical findings may appear in the eyes.

EYE SIGNS

In 1947, Walsh and Howard,⁴² using a slit lamp, detected eye changes in over 50 per cent of their patients with hypercalcemia. Later, it was shown that visible eye signs may be present in the conjunctiva or cornea, or both, and in recent years the increasing clinical recognition of these eye signs, visible to the examiner's naked eye, have made it possible on occasion to diagnose hypercalcemia at the bedside.

In the ocular conjunctiva there may appear small, glass-like crystal-clear particles in the region of the palpebral fissure. These deposits may prove irritating, and in fact patients may present themselves complaining primarily of eye irritation, describing the eye symptoms as a burning sensation with increased lacrimation. In addition, the conjunctiva may be injected and inflamed.

Calcium deposits of the cornea produce a hazy, gray opacity, appearing as a slender, elongated, crescent-shaped form located in the limbus of the cornea on either the nasal or the temporal side, or both.⁴³

The history and physical findings are, at their best, insufficient for diagnosis. However, their presence may produce a state of alertness in the physician as he probes the differential diagnoses which may evolve from the study of symptoms and signs presented by a patient. Laboratory and x-ray facilities provide additional aids once the possibility of hypercalcemia is considered. The establishment of its presence then poses the formidable problem of differentiation. Only by screening many possible etiologies, one by one, can the clinician define the given cause and, once having attained that state, attempt to apply necessary remedial measures. Most urgent, perhaps, is the differentiation of the hypercalcemia of hyperparathyroidism, which requires surgical intervention, from the other causes of hypercalcemia.

A survey of calcium and phosphorous metabolism with its interrelationship to bone and kidney focuses the mechanisms on which various clinical tests and differential procedures are based and necessary to establish etiology. A great deal has been written on the specific biochemical processes involved relative to specific changes occurring in many hypercalcemic states, but a great deal remains conjectural or theoretical.

METABOLISM OF CALCIUM AND PHOSPHOROUS

The metabolism of calcium and phosphorous are intimately related to one another and coordinated with the metabolism of bone and renal function. The average 70 kilogram man contains about 1200 gms. of calcium and 600 gms. of phosphorous mostly in the

form of six to nine kilograms of (water-free) bone.^{44, 45}

The average diet provides 0.8 to 1.5 gms. of calcium, the largest amount appearing in foods of dairy origin: Cheese contains 930 mg./100 gms.; cow's milk 100 mg./100 gms. The recommended daily requirement of calcium is one gram per day in the non-pregnant, non-lactating adult. Approximately 1.5 to 2.0 gms. of phosphorous are consumed per day; the non-pregnant, non-lactating adult requires a minimum of 0.9 gm./day. Unlike calcium, phosphorous is readily obtainable in diets adequate in other respects, because it forms one of the most widely distributed inorganic elements of common foods, appearing in good quantities in milk, other dairy products, meats, and fish. In fact, it would be difficult to ingest a diet deficient in phosphorous.⁴⁶

The availability of calcium and phosphorous to the body is determined in part by the degree of solubility and, hence, their ionization. The calcium of food may be in organic combinations with proteins and organic acids or as inorganic compounds of carbonate, bicarbonates, and phosphates. Phosphorous in foods may appear in the form of esters of phosphoric acid, in proteins, lipids, and carbohydrates, and in this form it is readily placed in solution by the digestive processes and absorbed. However, phosphates that occur as phytin, as in brown bread, are not absorbed. An insoluble form of phosphorous appears in cereal grain as Inositol Hexaphosphate; this is not absorbed because of the insoluble salt (phytin) formed when combined with calcium and magnesium.⁴⁷

Given an adequate diet, several factors influence the absorption of calcium. It is known that the ratio of calcium to phosphorous in the diet is important, for the optimum ratio for absorption of both elements is about 1:1 (calcium:phosphorous). In addition, the degree of concentration in the intestinal tract, the needs of the body for calcium and phosphorous, the intestinal acidity or alkalinity and the presence of vitamin D are contributing factors in the absorption of these two elements. Generally, calcium absorption is facilitated by a more acid medium as occurs in the upper intestinal tract; however, hyperacidity probably does not facilitate superabsorption of calcium.^{48, 49} Under normal conditions of gastric acidity, calcium

salts are converted to the soluble chloride form. The acidity of the duodenum, normally pH 2.3-7.0 is also important in determining whether the more soluble calcium salts are formed (chlorides and acid phosphates) or the less soluble basic phosphates. The calcium chloride and acid phosphate forms are readily absorbed, and it appears that the greatest degree of calcium absorption occurs from the upper intestinal tract. Vitamin D promotes the absorption of calcium and phosphorous, especially enhancing calcium absorption from the distal ileum where the alkalinity is higher than in the upper intestinal tract; consequently calcium uptake is relatively poor. Kramer and Kanof⁵⁰ summarized the role of vitamin D, stating, "little is known as to its action. In some mysterious manner it facilitates the absorption of calcium from the intestinal tract and deposits it as a phosphate or carbonate in osteoid and cartilage matrix."

The absorption of phosphorous, like that of calcium, is enhanced by acids, interfered with by alkali and, unlike calcium, it is increased by an excess of fat and decreased by a high calcium diet. The soluble inorganic phosphate compounds are readily absorbed while the organic phosphate compounds first must be hydralized in the digestive tract and converted to inorganic phosphate for absorption.

Once calcium and phosphorous have been absorbed and enter the blood, they may be used in various metabolic processes, or they may be stored or excreted. The great storage facility for calcium and phosphorous is the skeleton. In a normal adult the amount of calcium and phosphorous that enters the skeleton is off-set by an equal amount that is released from it. A state of checks and balances (dynamic equilibrium) exists between the calcium and phosphorous of the body fluids and the bones of the skeleton.

Both calcium and phosphorous make other contributions to the body economy. Calcium is necessary for the blood clotting sequence, and ionic calcium influences the strength of the heartbeat, as well as the transmission of nerve impulses and influences skeletal muscle irritability, but it appears that these phenomena do not require maintenance of a calcium concentration within a severely-held narrow limit. Phosphorous plays a central role in the conservation and transfer of en-

ergy in the intermediate metabolism of carbohydrates, proteins, fat enzymes and is quite important in the body's buffering system, dedicated to the maintenance of hydrogen ion concentration.^{51, 52}

Within the blood, calcium is in solution in the plasma. In 1913, Rona and Takahashi⁵³ demonstrated two major and roughly equal fractions of serum calcium, the diffusible (ionized) and the non-diffusible (un-ionized) portions. The diffusible fraction is a solution of partially ionized, weak electrolyte calcium proteinate. The non-diffusible portion is firmly bound with plasma protein. The ionized and un-ionized fractions are in equilibrium with one another. The ionized fraction is directly under the influence of the parathyroid hormone and is physiologically active, being free to diffuse into other extra-cellular fluids.

Fajans⁵⁴ has emphasized that the total serum proteins are essential in the interpretation of clinical serum calcium levels. The ordinary clinical laboratory does not measure ionizable serum calcium but reports the TOTAL serum calcium. Therefore, it is most important for the clinician to know the level of the serum proteins when studying the serum calcium. In addition, the physician should be aware of the normal range of serum calcium in the laboratory employed. It has been suggested that the range of nine to 11 mg. per 100 cc. as normal values for serum calcium has been pegged too high.^{55, 56} In any event, if the total serum proteins are normal a serum calcium of 10.5 mg. per 100 cc. should serve as an alert, indicating that further studies of the calcium-phosphorous metabolism of that patient should be undertaken. On the other hand, if serum proteins are depressed, a level of 10.5 mg. per 100 cc. may be definitely elevated and indicate hypercalcemia; less of the total serum calcium would be in protein-bound form and relatively more would be in ionizable form.

Phosphorous exists in the blood in four main forms: Inorganic phosphorous (orthophosphate) and three organic combinations—ester phosphorous, lipid phosphorous, and nucleic acid phosphorous.⁵⁷ Like calcium, the inorganic phosphate values of blood plasma have been challenged. Vigorous investigation of phosphorous serum levels requires a

deviation from the previously accepted values of three to 4.5 mg./100 cc in adults and from 4.5 to 6.5 mg./100 cc. in children. Greenberg, Winters, and Graham⁵⁸ feel that the accepted values for serum inorganic phosphorous concentrations have never been established adequately, and have been able to demonstrate that both age and sex affect the serum phosphorous level and must be taken into account in making diagnostic decisions (see figures 1 and 2). It is therefore important that each laboratory establish its normal values for serum phosphorous for each sex at various ages. It is known also that serum phosphorous decreases during periods of increased carbohydrate utilization and ingestion of large amounts of calcium or the parenteral administration of magnesium.

The non-lactating adult excretes the largest fraction of calcium in the feces as a component of intestinal juices, only a small portion appearing in the urine. The urinary mechanism for calcium excretion is not well-understood. In a normal adult, the serum threshold for urinary calcium is about seven mg./100 cc. The ionized portion of serum calcium passes readily through the glomeruli and appears in the glomerular filtrate. This increases the ionized calcium and increases proportionately that amount which appears in the glomerular filtrate or vice versa. There appears to be a limit to the glomerular filtration capacity for calcium, and should this be exceeded it is reflected in a rise of serum calcium. Tubules of the kidney nor-

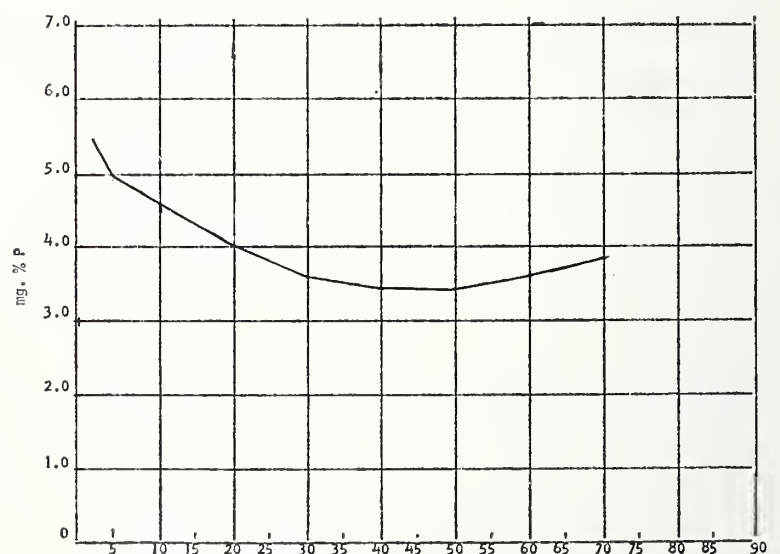


Figure 1.
Age in Years
Serum Phosphorous for Females

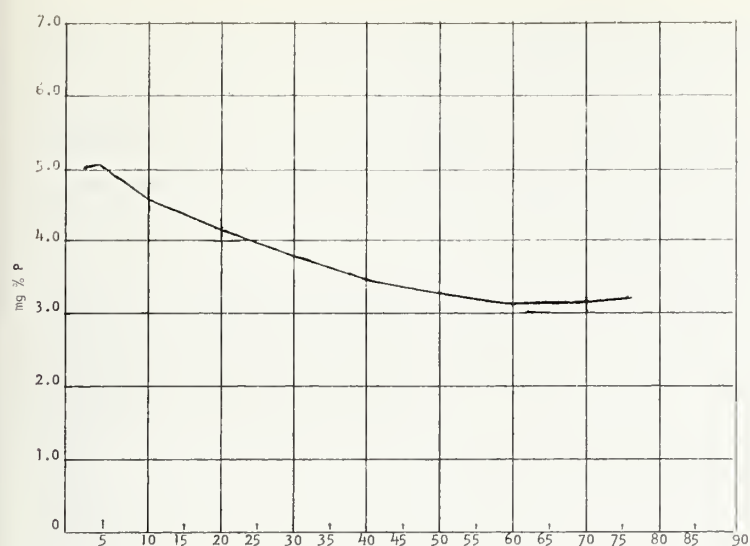


Figure 2.
Age in Years
Serum Phosphorous for Males

mally reabsorb about 99 per cent of the filtered calcium; the total amount reabsorbed varies directly with the amount filtered by the glomeruli.

Hypercalciuria can be produced by three mechanisms: An increase in the amount of calcium filtered by the glomeruli, a decrease in the renal threshold, or by an increase in parathyroid hormone.^{59, 60} Albright⁶¹ reported that in hypercalcemia with hypercalciuria, calcium casts may be formed in the renal tubules and extruded into the urine.

Unlike calcium, the largest portion of phosphorous is excreted in the urine with only a small quantity appearing in the feces. Like calcium, a great deal of phosphorous can be excreted in the milk during lactation. In urine, phosphorous appears in the inorganic form (92-96 per cent), the remaining portion appears as unsplit ester phosphates. There does not appear to be a serum threshold for the glomerular filtration of inorganic phosphorous. Thus, all of the inorganic phosphorous passes through the glomeruli in the absence of renal impairment; there is no limit to the glomerular filtration capacity. The tubular reabsorption of phosphorous depends on the quantity of parathyroid hormone present. The administration of parathyroid hormone decreases the tubular reabsorption of phosphorous and greater amounts appear in the urine. In hyperparathyroidism, a decrease in the serum concentration of inorganic phosphorous occurs (since tubular reabsorption of phosphorous is reduced) and an increased amount of phosphorous consequently appears in the urine. Also, in the

normal individual with an unusually high phosphorous dietary intake, all other factors being equal, there is an increase in urinary phosphorous excretion.⁶²

BONE METABOLISM AND PARATHYROID HORMONE

The formation of bone involves the laying down of a protein matrix and deposition of calcium phosphate crystals into the mass of protein tissue. The osteoblasts appear to produce this organic protein matrix (osteoid) and increased osteoblastic activity is reflected by elevated serum alkaline phosphatase levels. The proper mineralization of osteoid tissue requires calcium and phosphate ions at the site in a concentration equal to the proportion of calcium and phosphate in the mineral matter of bone. In an unknown manner, calcium and phosphate ions combine and precipitate in the form of angularly-shaped crystals which assume a definite pattern upon the matrix. This calcium phosphate salt crystal appears to be hydroxyapatite with the formula $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$. The growth of mineralization is continued layer upon layer, thereby the exposed surface of the moment becomes entrapped in the enlarging mass. Bone crystals in the body, if laid out, would cover a 400 acre area. The final calcified bone mass presents three types of surfaces: (1) a surface upon which nothing appears to be happening; (2) a surface upon which bone is being formed; (3) a surface upon which bone is being reabsorbed.^{63, 64, 65} It has been accepted that the parathyroid gland regulates the calcium-ion concentration of the blood plasma and that there appears also to be an additional influence on the control of the blood phosphorous. These changes are effected through calcium supplied by the diet, the bone reservoir and renal function. Observers differ in their interpretation of how these mechanisms are accomplished and at present all the evidence is not available concerning the function of the parathyroid hormone.

The parathyroid glands appear as four flattened, oval discs measuring about three to four mm. in width and six mm. in length, arranged in two superior and two inferior position at the posterior edges of the lateral lobes of the thyroid gland.⁶⁶ In addition, numerous parathyroid glands may be scat-

tered through the fat and connective tissue of the neck. These glands are endocrine in nature and produce a hormone, appearing to be free of the influences of the pituitary gland as evidenced by serum calcium, phosphorous studies in patients with hypopituitarism and from facts accumulated from experimental animals and humans after the performance of hypophysectomy.

The current concepts of what role the hormone of the parathyroid glands plays in the metabolism of calcium and phosphorous stems from three sources. The first of these is based on measurements conducted in the parathyroidectomized experimental animal or by the accidental extirpation of the parathyroids by thyroid surgery in humans. The second set of observations have been derived from cases of spontaneous hyperparathyroidism, and the third and final source of facts derives from experiments using parathyroid extract which contains active parathyroid hormone.⁶⁷ Greenwald⁶⁸ in 1925, observed that parathyroidectomy was followed by diminished output of phosphorous in the urine. Albright and Ellsworth⁶⁹ in 1929 introduced the concept that the calcium ion per 100 cc. times the phosphorous ion per 100 cc. (the solubility product) is approximately constant when all factors affecting calcium and phosphorous metabolism are constant except for the amount of parathyroid hormone present. This theory, derived from observation of a hypocalcemic, hypoparathyroid patient, stated that the serum inorganic phosphate was high and that a single injection of parathyroid extract caused a rapid rise in urine phosphate. Continued treatment of the patient with parathyroid extract resulted in a gradual fall in serum phosphate as well as a rise in serum calcium. As phosphate loss in the urine increased, plasma phosphorous decreased. The decreased serum phosphate in turn modified and changed the calcium times the phosphorous product of the plasma; this in turn permitted increased calcium resorption of bone, resulting in a rise of serum calcium.

In 1949, Albright and Reifenshtein⁷⁰ modified this hypothesis by stating that the primary effect of parathyroid hormone was exerted upon some phase of phosphate metabolism, whether it be renal or extra-renal.

The effect of the serum calcium was still held to be secondary.

Thomson and Pugsley⁷¹ in 1932 proposed another view, stating that the parathyroid hormone acts directly on bone, resulting in resorption with liberation of calcium into the blood.

In 1948, Barnicot⁷² and Chang⁷³ in 1951, presented evidence that the parathyroids act directly on bone. In experiments transplanting parathyroid glands onto the parietal bones of the skull in mice, it was noted that a marked local reabsorption of bone immediately beneath the graft occurred. In 1954, Grollman,⁴⁷ using peritoneal lavage to maintain blood chemistries within physiological limits proved that parathyroid extract when injected increases the serum calcium in nephrectomized animals. Thus, a recapitulation of the facts derived from experiments through the years of 1948 to 1954 demonstrates that the parathyroid hormone acts directly on bone and that it is capable of raising serum calcium in the absence of the kidneys. The observation of the effects of the parathyroid hormone on phosphorous and how these changes affected the serum calcium appeared after the year 1954.

The stimulus for conducting these experiments was provided by the recent purification of the parathyroid hormone with its attendant increased potency. Collip⁷⁵ and Hanson,^{76, 77} working independently in 1925, prepared the first physiologically active extract. Recently a high degree of purification of this extract has been achieved. The potency of the present product is reported to be 2500-3000 units per mg. It has a molecular weight estimated to be 7000 (± 1500) and upon analysis proves to be a protein.^{78, 79} Copp⁸⁰ in his discussion of the possibility of whether there may be two parathyroid hormones (one which primarily affects bone, and one which primarily affects kidney), contends that the confusion has occurred from the very large doses of the commercial extract (used prior to the purified extract), and that some contamination side effects due to foreign constituents in the commercial extract occurred.

Munson and Iseri⁸¹ recently have shown in the parathyroidectomized rat that the serum inorganic phosphorous failed to rise before the fall in serum calcium. Thus, the tenets of Albright's hypothesis (i.e. a rise in

serum phosphorous due to increased tubular reabsorption of phosphorous must occur before a fall in the serum calcium takes place, thus altering the product of calcium milligrams per 100 cc. times phosphorous milligrams per 100 cc.) were not met. Munson then injected parathyroidectomized rats with parathyroid extract subcutaneously. The absorption of the hormone by this route is delayed and does not prevent the fall in serum calcium and phosphorous which occurs within two hours after removal of the parathyroid glands. At the end of six hours he found both the serum calcium and serum phosphorous levels of these animals had returned to preoperative levels; while the control rate, (i.e. parathyroids were removed but controls were not given parathyroid hormone) progressed to tetany and death within six hours. The rise in serum calcium which occurred in animals given the subcutaneous injection of parathyroid hormone was not accompanied by a fall in the serum phosphorous. Here again, Albright's principle was not confirmed, for the serum calcium rise should have been preceded by a decrease in the serum inorganic phosphorous, as the parathyroid hormone decreased tubular reabsorption of phosphorous, increasing the urinary phosphate and thereby lowering the serum phosphorous. Munson⁸² points out that the effect of the hormone was to return both the calcium and the phosphorous to normal; he concludes that in man as well as in the rat the effect of parathyroidectomy and of parathyroid hormone on the level of serum calcium is not dependent on a prior change in the circulating level of inorganic phosphorous. Therefore, from the experiments of Munson one can conclude that most likely the primary target tissue of the parathyroid hormone for regulation of the level of circulating calcium is bone rather than the kidney and that whatever effects the hormone may have on phosphorous metabolism are probably of secondary importance.

Therefore, at the present time, it appears that the parathyroids are sensitive to the calcium concentration of the plasma and that a falling level of calcium ions stimulates the output of parathyroid hormone. The hormone in turn increases the mobilization of calcium from bone (by direct action), thereby raising the calcium level of the plasma and that this method is one of self-regula-

tion. McClean⁸³ describes the method of self-regulation as a "feed-back" mechanism. He defines this further by stating that in this system information about the out-put is fed back to an earlier stage, to modify the action of the earlier stage and thus effect a change in the out-put itself.

The effects of parathyroid hormone upon serum phosphorous (thought to be of secondary importance) are not clearly defined. It is fairly well-agreed that the rapid rise in urine phosphorous after an injection of parathyroid hormone indicates that the effect upon the kidney is direct, but the precise biochemical mechanism involved remains obscure. The confusion reigning now is illuminated by the fact that Nicholson⁸⁴ advanced experimental evidence indicating that the principle mode of action of this hormone on the kidney is to stimulate active excretion of phosphorous by the distal tubule and not, as is usually assumed, to inhibit the reabsorption of phosphorous by the proximal tubules. Because of this confusion, it has been postulated that the parathyroids are capable of producing two hormones, one affecting calcium metabolism per se, and the other influencing only phosphorous metabolism. □

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Amputations for Rehabilitation

AT FIRST GLANCE, the title of this discussion may seem to be directed only to a somewhat limited segment of the medical profession. Quickly we may pass this by, thinking to ourselves, this does not apply to us, this is not a part of our routine work; but much to our surprise, statistically we find a large per cent of amputations done by the general surgeon and the general practitioner, well equipped and qualified to do this surgery. Perhaps we find more of this done by the above men due to the great strides in training, the increase in facilities for proper hospital and nursing care, the economic necessity of preserving and protecting the financial status of the patient, and particularly because of the emergency factor so often important following trauma and accidental injury due to our mechanical age.

If a short review of the more modern and basic methods of prosthetic fittings would avoid reamputations, then we feel the economic savings which follow to the individual and to the community at large would well justify our considerations. Therefore, in making and fitting artificial limbs, the one and only endeavor is to make certain that they are comfortable, functional, acceptable in appearance and as reasonable in cost as possible. This fitting by the prosthetist depends upon his individual skill, the type of limb required, but equally important to him and to the patient is the site of application.

Since this agency furnishes such a large per cent of such appliances to the medically indigent, we are particularly and necessarily involved in these problems.

Since World War II, giant strides have been made in the use of plastics and aluminum for artificial limbs. The National Research Council has participated actively in this work, enlisting the help of the airplane and missile industry in making these improvements. All of this has given better manufacturing techniques, lighter and more comfortable appliances and a greater ease of fitting areas of the body that in the past were unacceptable to the prosthetist.

In the upper extremity practically any length of stump can be well fitted. We must

always remember that even a small stump, below the elbow or shoulder is in general much better than a simple disarticulation, although many disarticulations can be fitted satisfactorily. The short stump, when it can be preserved, gives much improved muscular control and consequently better use of the prosthesis.

In the lower extremity in general, amputations in the lower one-half of the tibia and be preserved, gives much improved muscular control and consequently better use of the prosthesis.

When possible, the preservation of length of the stump is very important. To produce a better, well shaped, well padded painless stump suture or reinsertion of muscle to end of amputation rather than tendon insertion and tying of all severed nerve ends with non-absorbable suture, as silk or cotton, lowers the formation of tender and painful neuromas. By re-attaching muscles with proper tension, closing deep fascia and other deep structures layer by layer and everting skin and superficial tissue, we may avoid many scar troubles.

Special training courses are available at University of California, Los Angeles, Northwestern and New York University for help and assistance to all the professions in the newer methods of fitting artificial limbs.

Here in Oklahoma, we have Amputee Clinics for adults and children at the University Medical Center. This is composed of an Amputee Clinic team, consisting of an orthopedist, physical therapist and prosthetist. This is available to the members of the medical profession for the proper fitting of artificial limbs. The staff men serve without remuneration and the patient is then returned to his attending physician. A nominal charge is made for this service.

A great deal of credit must be given to my many dedicated colleagues for their kind assistance, advice and constructive criticism. Through such interchange of ideas, we feel continued progress will be made in this all important work.—*Francis E. Dill, M.D., State Medical Consultant, Vocational Rehabilitation, Oklahoma City, Oklahoma* □

X-Ray Dose Measurements With a Locally-Constructed Water Phantom

G. R. RIDINGS, M.D.
R. E. JOHNSTON, M.S.

Modern radiation therapy requires equipment for accurate measurement of depth doses, because (a) with supervoltage, the classical radiobiologic signs, such as skin reactions, are missing, and (b) in a high proportion of cases it is necessary to shape the field to fit the particular lesion, thus altering its dose distribution. One such device was constructed locally.

BEFORE THE advent of supervoltage (high energy, including cobalt) external beam roentgentherapy, the universal caution sign in gauging x-ray dose was the appearance of skin erythema. Even though only a surface phenomenon, this was a clinically useful sign to the experienced therapist, giving him a rough indication of dose at depths. The supervoltage beam does not provide this sign. Therefore, even for simple treatment situations, precise physical control of all aspects of dosimetry is imperative. For example, "conventional" central axis dose tables are not adequate (figure 1A); isodose plots (figure 1B) show the situation more realistically. This is made even more important because, with the high energy, well-columnated beam, it is possible to use more narrow fields than with the 200-250 kv beam, thus irradiating less tissue. Since this

is possible, it is essential—economy of irradiation is a hallmark of acceptable radiation therapy.

In multiple cross-firing beam irradiation, central axis dose tables cannot give the picture of the irradiation pattern; this can only be done with complete isodose plots (figure 2).

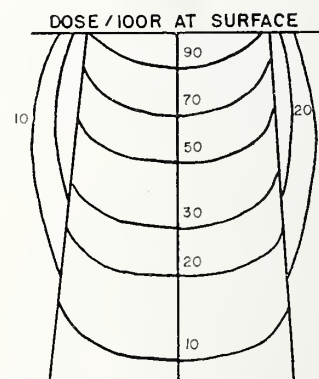
The two types of basic data mentioned above (central axis dose tables; isodose plots) are available from the equipment suppliers, but even these tables and plots must be checked carefully against the performance of the installed machine. Also, if treatment plans are limited to those allowed by these types of data, these treatment plans

CENTRAL AXIS
DEPTH DOSE TABLE

DEPTH IN CM	DOSE / 100R AT SURFACE
0	100.0
2	94.2
4	78.0
6	61.0
8	46.3
10	34.8
12	26.0
14	19.5
16	14.5
18	10.8
20	8.1

(A)

ISODOSE PLOT



(B)

Figure 1. (A) A standard central axis depth dose table. This shows depth doses only for the center of the x-ray beam. (B) A typical isodose plot which indicates the radiation dose throughout the irradiated volume.

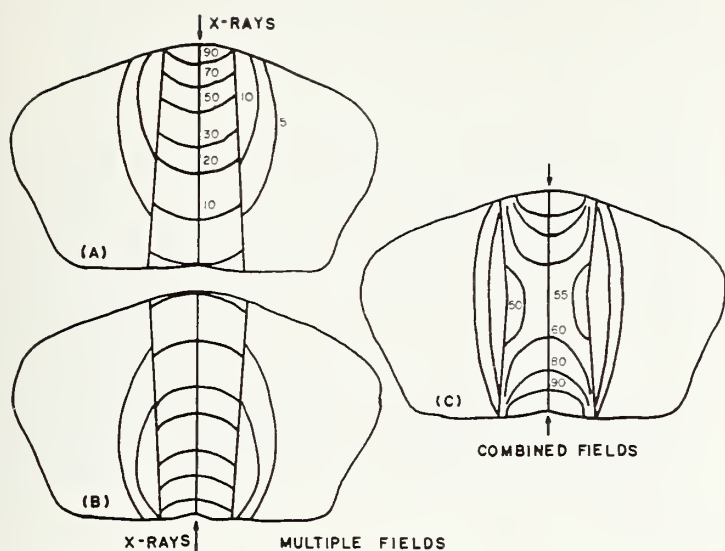


Figure 2. Dose patterns in cross-firing fields. (A) The isodose plot for an anterior field. (B) The isodose plot for a posterior field. (C) The combined fields.

will not represent full exploitation of x-ray therapy. For example, a certain antral neoplasm may be treated best by delivery of a homogeneous dose to the antrum, sparing deeper tissues as much as possible. It is probable that this could be done best by use of two beams, 90° to each other. The isodose plot of the unshaped cross-fired beams (figure 3A) show an intolerably high dose in the near part of the "V" of the intersecting beams. Use of a wedge filter allows shaping of an x-ray beam (figure 4) so that the two intersecting beams deliver a homogeneous dose to the desired (tumorous) volume (figure 3B), sparing other tissues quite nicely.

It is necessary that data for this type of beam-shaping be produced locally and for the exact beam-shaper used. Since it cannot

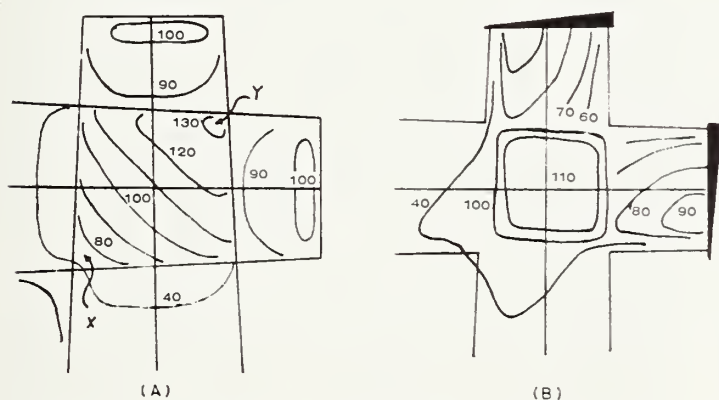
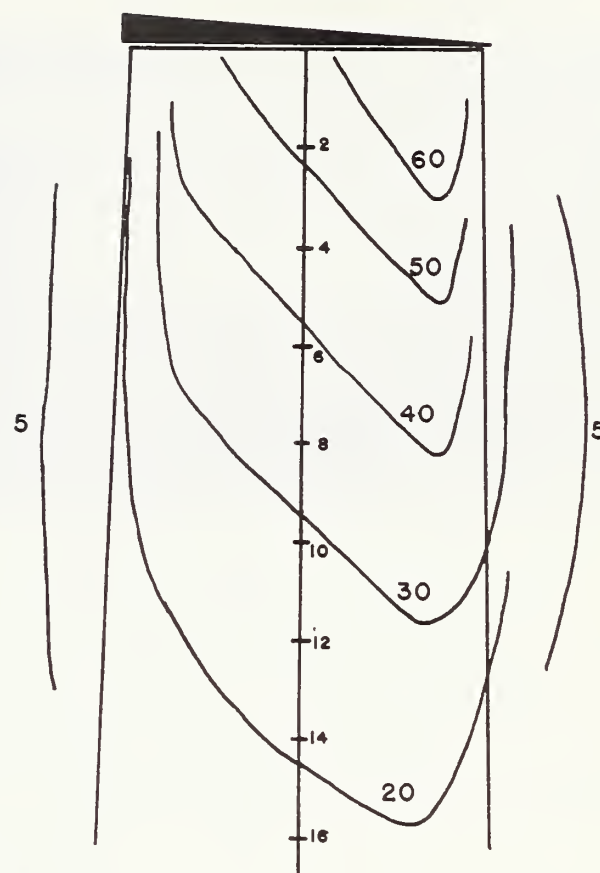


Figure 3. (A) The radiation pattern resulting from the combination of two ordinary fields at right angles. Note the wide variation and nonuniformity of radiation dose; it would be impossible to raise the dose at X without intolerable damage at Y. (B) Illustrates the uniform radiation pattern obtained by shaping the x-ray beam with lead wedge filters.

2 MEV VAN DE GRAAFF



DOSE / 100R IN AIR

7 X 7 FIELD WITH LEAD FILTER

Figure 4. An isodose plot of an x-ray beam "shaped" by using a wedge shaped filter of lead.

be calculated reliably, it must be measured. This measurement requires placing a detecting probe in a large number of positions and determining the dose at each point; then, connecting equal dose points to form "isodose curves." Since the measurements and calculations in each position consume a sig-

Since graduating from Vanderbilt School of Medicine in 1950, G. R. Ridings, M.D., has been certified by the American Board of Radiology. He is Professor of Radiology at the University of Missouri Medical Center.

Doctor Ridings is a member of the American College of Radiology and the Association of University Radiologists.

R. E. Johnston, M.S., graduated from Vanderbilt University where he now holds a fellowship in Biophysics.

Mr. Johnston is a member of the American Physics Society, the Society of Nuclear Medicine, the Association of Physicists in Medicine and the Health Physics Society.

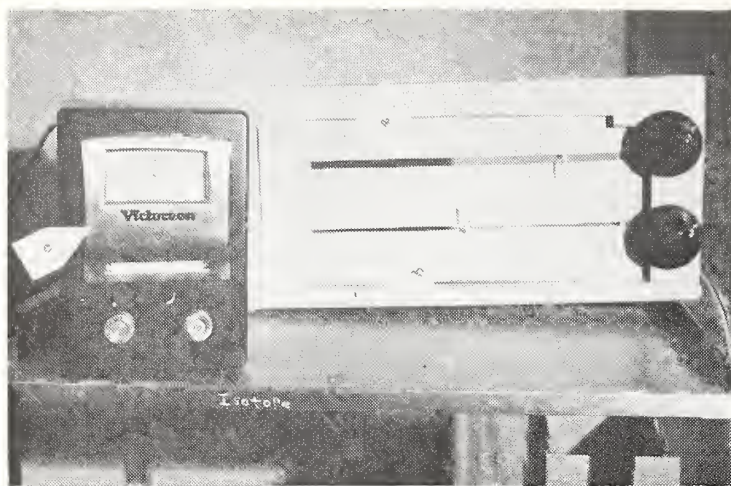


Figure 5. Water Phantom (a) Plastic end, (b) ionization detector probe, (c) tracking mechanism.

nificant amount of time, plotting even an uncomplicated treatment situation would require many, many hours except for the availability of special equipment. The "water phantom" is one such type of device.

DESCRIPTION

A water phantom with associated gear is usually rather expensive; purchase of a completed unit was considerably beyond our means. Therefore, we undertook construction of one which, although not fully automatic, would serve our needs; also, which can be "upgraded" later by addition of other components. The major parts of this system are (figure 5):

- a. A water phantom: This is an inexpensive galvanized, water-tight tank with one end being of tissue-equivalent plastic. When filled with water, it serves well as a tissue-equivalent body. Since

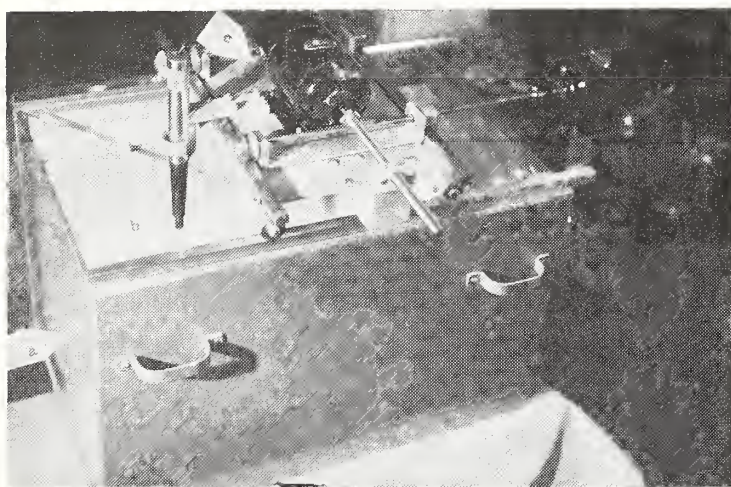
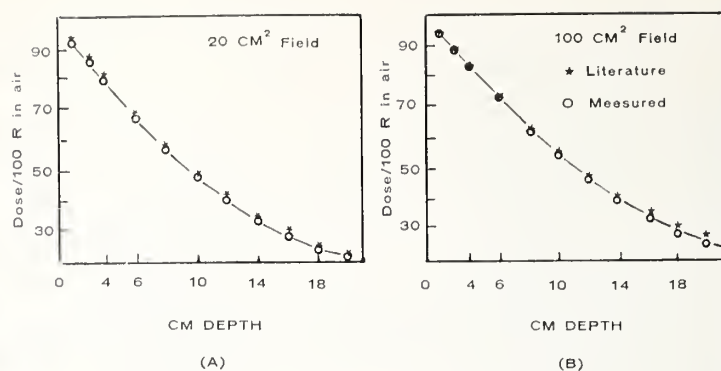


Figure 6. Water Phantom Control Panel. (a) Longitudinal indicator; (b) Transverse indicator; (c) Roentgen Ratemeter.



CENTRAL AXIS DEPTH DOSE

Figure 7. A comparison of depth dose data obtained by University Hospital measurements (A) and data obtained by others (B)³.

it is liquid, the detector probe may be conveniently moved through it, seeking any point (or line or value) desired for measurement.

- b. A radiation detector probe: A conventional Victoreen ionization chamber, water-proofed.
- c. Driving and tracking mechanism: This consists of two sets of motors, one driving the detector probe across the radiation beam; the other driving it along the axis of the beam. These are selsyn motors, electrically connected with matching selsyn motors on the control panel (outside the x-ray room.) The selsyns at the control panel (figure 6) move recording devices, thus registering the probe position on scaled paper. Dose rates at each position are read directly on the dose-rate meter and recorded. Thus, a treatment pattern can be measured in a short time.

The error in positioning due to play in the mechanism and machining precision is less than ± 0.1 mm. The scale is made of K & E 10 x 10 cm graph paper and is read by a hairline on a plastic slide. The overall accuracy of positioning the detector is limited by the accuracy of reading the scale. The maximum error in positioning is within ± 0.5 mm.

The cost of the system exclusive of the dose-rate meter is less than \$400. The dose-rate meter (a standard item of equipment required wherever modern radiation therapy is done) costs about \$900.

RESULTS

Measurements of the central axis depth doses were made using our system and com-

pared to measurements reported by others. The results are reported in figure 7. There was almost exact correlation. With confirmation of our data, we proceeded to determine the isodose distributions for specialized treatment fields. One of these fields is presented in figure 4. This field was obtained by using a wedge filter of lead designed to produce isodose curves at a 45° angle. A combination of two wedge fields at 90° to each other produced a uniform dose throughout the treatment volume.

SUMMARY

A brief description has been presented of a simple, relatively inexpensive device for

the accurate measurement of radiation dose distributions for specific treatment fields. Such an instrument can be constructed on a very limited budget, yet can enable increased control and accuracy in radiation dosimetry and increased versatility in treatment planning. ☐

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G. R. Ridings, M.D.

Department of Radiation Therapy, University of Missouri Medical Center, Columbia, Missouri

CORNELL CRASH INJURY STUDY SET FOR OKLAHOMA

Beginning in January, 1964, the Automotive Crash Injury Research Division of Cornell University will start a two and one-half year survey of automobile and truck accidents in Oklahoma. The purpose of the research, part of a continuing interstate study, is to further improve the safety features of automotive design.

About 700 injury-producing accidents will be studied annually under the program. The state will be divided according to highway patrol districts, with only two of the districts participating during any six months' period.

Auto and truck accidents investigated by the highway patrol in the survey areas will be handled by Cornell's ACIR in the following manner. Accident report forms and

medical report forms will be in the possession of the patrolmen, who will complete the accident form himself and deliver the medical report form to the attending physician or hospital. The completed accident and medical forms will be forwarded to the State Health Department for correlation and then be sent to Cornell for data processing.

Oklahoma physicians will be asked to cooperate in completing the medical report forms by the OSMA's Council on Public Health. The forms are rather simple, calling for the seating position of the injured person in the accident car, a brief word description of injuries or cause of death, and a graphic indication of the location and types of injuries. ☐

ABSTRACTS

DIASTROPHIC DWARFISM

Another form of osseous dysplasia characterized by dwarfism, clubfoot deformity, and scoliosis was described in 1960 by Lamy and Maroteaux. Two such patients were subsequently identified at Children's Memorial Hospital, and reported by Taybi.*

Thorough radiographic studies of these patients and review of available material from other sources has fairly well identified the characteristics of this disorder. In addition to the deformities previously mentioned, the limbs are shortened, and the radiographs show narrowing of the interpediculate spaces of the spine, enlargement of the ends of the long bones, irregular length and shape of the metacarpal, metatarsal, and phalangeal bones, and irregularities of the epiphyses. Furthermore, anomalous changes in the tendons and joint capsules have been found at surgery in some cases. The disorder is apparently familial and appears with equal frequency in boys and girls. Differentiation from achondroplasia and spondylo-epiphyseal dysplasia can be readily accomplished by x-ray examination.

REVIEWER'S NOTE: If our ability to correct the defective genetic processes in these unfortunate children was as great as our ability to identify and classify them, the lives of all concerned would be much happier. In the mean time, we can find some small consolation in the work of those who have at least started to solve the problem by recognizing its presence and are painstakingly sorting the little information we have.

*Diastrophic Dwarfism. Hooshang Taybi. *Radiology* 80: 1-10 (January) 1963.

PROMPT DIAGNOSIS OF OBSTRUCTIVE JAUNDICE DUE TO CANCER

An accurate differential diagnosis of jaundice is often difficult, but always required. In 1931, Watson gave the opinion that only severe biliary obstruction such as that encountered as a result of carcinoma would keep bile pigment from the intestinal tract, and that the measurement of fecal urobilinogen would be of material assistance in this regard.

Braden and DuVal* measured the excretion of urobilinogen in the feces of 29 consecutive patients having jaundice and also in 24 other non-icteric patients who had a variety of diseases. Fifteen of the icteric patients excreted more than 5 mg. per day of fecal urobilinogen. None of these had malignant obstruction, but of the 14 patients excreting less than five mg. of fecal urobilinogen per day, nine had complete obstruction due

to carcinoma, two had congenital biliary atresia, and one had a stone impacted in the common duct. The cause of icterus in the remaining two patients could be readily established by history and other tests.

Because no patient with carcinomatous obstruction excreted more than five mg. of urobilinogen in his feces in 24 hours, there were no "false negatives." The test requires only 72 hours to complete (the average of three daily collections is used), so there is no prolonged delay in getting patients to operation.

REVIEWER'S NOTE: Whenever someone jostles the medical cornucopia, another test for the differential diagnosis of jaundice rolls out. As our British colleagues have been saying for some time now, we do too many tests of "liver function" and thereby boggle about in the labyrinth of hepatic metabolism when we would do well to obtain a careful history, take a good look at the patient, and then examine his urine and feces. Unfortunately, getting the laboratory to work with the last often threatens diplomatic relations, so instead, the patient must yield up quantities of blood at regular intervals while the clinicians ponder the rise and fall of this and that. It is good to see a simple and logical test like the estimation of fecal urobilinogen examined critically and found to be not wanting.

*Obstructive Jaundice Due to Cancer. Barbara F. Braden and Merlin K. DuVal, Jr. *Archives of Surgery* 86: 419-422 (March) 1963.

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Molecular Deficiency of Glucose-6-Phosphate Dehydrogenase in Primaquine Sensitivity. H. N. Kirkman and B. B. Crowell. *Nature* 197: 286, 1963.

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Duration of Stimulus as the Effective Determiner of Olfactory Stimulation. R. A. Schneider and J. P. Costiloe. *Clinical Research* 11: 56, 1963.

Reprints of the above publications are usually available on request from the senior author, c/o Mrs. Joan Campbell, Veterans Administration Hospital, 921 N.E. 13th Street, Oklahoma City, Oklahoma.

The Ideal Stethoscope

CHARLES W. CATHEY, M.D.*

SINCE THE introduction of the stethoscope by Laennec in the early 1800's its position as a diagnostic instrument has become secure. It was refined from a rolled quire of paper to a simple one-foot cylinder of wood with an inner bore by Laennec. In 1828 Piorry modified the Laennec stethoscope by reducing it to the thickness of a finger and adding an ear piece and a trumpet-shaped chest piece. The exact date of the first binaural stethoscope is unknown. Doctor C. J. B. Williams described a binaural stethoscope in about 1843 and Doctor Arthur Leared demonstrated a binaural instrument in 1851.

The stethoscope has since undergone many refinements and alterations and now consists of a specific set of inter-dependent components as listed in this discussion.

The ideal stethoscope should be able to deliver to the ears audible physiologic phenomena without significant distortion or loss of intensity. The usual acoustic range of these sounds is 60-600 cycles per second. A simple stethoscope does not amplify the original sounds but simply delivers these with variable degrees of intensity, dependent upon its construction.

A desirable acoustic stethoscope should include the following:

- (a) Ear pieces as large as possible and adjusted for individual anatomic variations of the user's auditory canals. The ear pieces should occlude the external auditory canal to eliminate extraneous sounds.

- (b) A binaural with an inner diameter of one-eighth inch with a spring tension, sufficient to hold it in the ears without discomfort.
- (c) Tubing, 10 to 14 inches in length, with an inner diameter of one-eighth inch. It should be single bore from the chest piece to the binaural, and thick enough to exclude outside noise. Preferably the inside lumen should be polished.
- (d) A bell with as large an aperture as is practicable, and with a shallow air chamber. The air chamber should be of sufficient depth, however, to prevent occlusion by underlying soft tissues.
- (e) A diaphragm chest piece with as large an aperture as is practicable and with the best possible internal volume. The diaphragm preferably is of plastic, stiff enough to suppress the transmission of low pitched sounds.

It is important also for the individual to have an intimate acquaintance with the character of the sounds that he is listening for, in order to be able to differentiate and interpret properly what is heard. In the diagnosis of cardiac disease, interpretation and experience are more important than the ideal stethoscope. □

* * *

The American Heart Association is now receiving applications for Grants-in-Aid for support of studies to be conducted during the fiscal year beginning July 1, 1964. These applications must be received by November 1, 1963. For further information, contact the Director for Research, American Heart Association, 44 East 23rd Street, New York City 10, New York.

*Instructor, Department of Medicine, University of Oklahoma Medical Center, 301 N.W. 12th Street, Oklahoma City, Oklahoma.

Dean's Message

As a deviation from previous messages, it may be appropriate to share with you a letter from a member of the 1963 graduating class of medical students. Doctor Coussons has been a president of the Alpha Omega Alpha chapter, and a thoughtful and diligent student. By now he and his classmates will have entered the realm beyond the university, taking with them our very best wishes and kind memories.

"Dear Dean Everett:

"It hardly seems like four years since, as entering freshman members of the class of 1963, we sat in the Medical School Auditorium and listened to your welcoming comments. Few of us realized then, as we do now, that learning the art is even more difficult and important than learning the science of medicine.

"The basic science years were filled with long hours of study spent on seemingly overwhelming amounts of material which gave

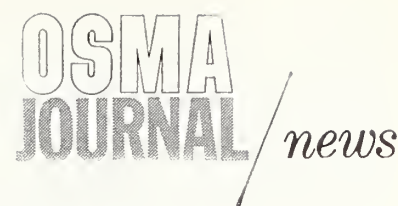
us a foundation on which to build future concepts. The introduction to clinical medicine and the patient in the third year provided a much needed impetus to spirits somewhat dampened by the realization of our inadequate knowledge. The clinics and preceptorships of our senior year gave us further challenges in the development of our medical acumen.

"Admittedly at times during the four years each of us feels a touch of unpleasantness or hostility toward our many demanding duties and assignments, but few would trade the final result.

"We all follow with keen interest the developments which affect the course of medical practice. Next year, as interns, some of us will leave the state for the first time to further our studies, only to return later to establish practice. We are confident that the training we have received here at the University of Oklahoma School of Medicine will hold us in good stead.—*R. T. Coussons*" □

Mark R Everett

"OPERATION HOMETOWN": A LOCAL PROJECT



The AMA-OSMA plan for grassroots action against the social security health care scheme requires energetic response from the county medical societies of Oklahoma if it is to be successful.

"Operation Hometown" is a well-conceived nationwide campaign against H.R. 3920, the 1963-64 version of the "Medicare" proposal to socialize hospital, nursing home and certain medical care for all U.S. citizens over age 65.

A six-phase program for county medical society implementation, "Operation Hometown" provides plans and materials for such activities as: *The Formation, Training, and Operation of a Speakers Bureau; The Enlistment and Utilization of Allies; Newspaper, Television and Radio Relations; The Development of An Effective Letter-Writing Campaign; The Distribution of Educational Materials; and, a Congressional Contact Program.*

County society legislative chairmen were mailed a complete kit on the subject on May 6th, followed by a letter from the OSMA Council on Public Policy urging the immediate activation of the plan.

Immediate Buildup Necessary

According to Rex E. Kenyon, M.D., Chairman of the Council on Public Policy, the immediate activation of "Operation Hometown" is necessary despite predictions that H.R. 3920 will be dormant during the summer of 1963. "While Mr. Kennedy has his hands full with civil rights and tax legislation this summer and will probably not push hard for the social security bill, we desperately need to build an effective legislative organization throughout the county medical societies in preparation for a legislative showdown in election year 1964," he said.

Kennedy is expected to use H.R. 3920 as a top issue during his campaign for re-election, and the political arm of organized labor, the AF of L's Committee on Political Education (COPE), has named H.R. 3920

as its top domestic legislative goal. "There is no question that the medical profession is now at the crossroads," Kenyon said, "and it will take the fight of our lives to preserve our present health care system."

A Simple Plan

Despite its simplicity, "Operation Hometown" will surely defeat H.R. 3920 if it is put to work by enough county medical societies across the nation. It is a step-by-step application of a concept basic to democracy: *Laws are made by representatives of the people; most representatives are responsive to the wishes of their constituents; the majority of the people will oppose H.R. 3920 if they understand it; "Operation Hometown" will bring about such understanding and result in widespread congressional opposition to the scheme.*

Organization and Operation

The "Operation Hometown" kit contains instructions and provides for the division of responsibility in the organization of a legislative action committee in each county medical society. Here is a summary of the responsibilities to be delegated to individual physicians in each county:

Chairman of Committee: The chairman is responsible for the organization and supervision of all phases of the program. In the kit, he is furnished with organizational instructions, reference material and a sample speech to use at organizational rallies. After getting underway, it is suggested that monthly meetings of the team captains be held to keep the program alive.

The chairman is furnished kits to distribute to team captains of the following activities:

Speakers Bureau: This person is to organize and train a county society speakers bureau, and to arrange for appearances before local civic clubs, fraternal groups, women's church, farm, business and professional organizations. Reference material and four sample speeches are furnished.

NOTE: Organizations will be preparing their programs months in advance, so they should be contacted immediately to get "Operation Hometown" on the program during 1963-64.

Letter Writing: This subcommittee has perhaps the most important assignment, since mail to congressmen is the most effective way to demonstrate large-scale opposition to H.R. 3920. There are two letter writing programs to be organized and aimed at the congressman: a sustained or climate-conditioning program and a crash program to produce several thousand letters on short notice. In addition, another aspect of this assignment is to develop a sustained "Letters-to-the-Editor" program for local newspapers. The team captain's kit contains many helpful suggestions.

Enlisting Allies: To be coordinated with the Speakers Bureau and Letter-Writing activities, this phase of the operation is simply the enlistment of other groups and individuals into the fight against socialized medicine. The majority of organizations will help, if they understand the issues.

Press Relations: Newspaper ads, radio and television spots will be furnished by the AMA for local use, and in this respect the local society's function will be to obtain the necessary financial appropriation for the series. In addition, this subcommittee should establish liaison with local news media, and make sure that editorial positions on H.R. 3920 are based upon fact. The team captain's kit contains sample press releases, radio programs and advertisements for use in developing locally-produced public relations projects as supplements to promotions which will be forthcoming from the AMA and OSMA.

Congressional Contact Program: Tours to Washington and medical society sponsored events for your

Congressmen within his own district are proposed in this phase of "Operation Hometown." While the other activities of the overall campaign are indirect in nature, this important phase amounts to "face-to-face" persuasion.

Materials Distribution: This team captain with the help of the auxiliary, is responsible for maintaining an adequate supply of educational materials on the subject and for seeing that they are on hand in each doctor's office.

Positive Outlook

Doctor Kenyon urges each county medical society to approach "Operation Hometown" and the subsequent defeat of H.R. 3920 with a certain degree of optimism. "Gallop polls definitely show that we are winning public support for our position," he said, "and if we continue to polish our legislative and public relations efforts we will undoubtedly emerge as victors in this serious struggle—the campaign program which is in your hands is our vehicle—let's all get aboard!" □

The 29th Session of the Oklahoma State Legislature adjourned sine die, officially, at 3:00 p.m., Friday, June 14, 1963. With 357 bills introduced in the Senate and 574 in the House, the Oklahoma lawmakers were faced with the burden of meeting State Government departmental appropriation requests and finally enacted into law a budget exceeding a billion dollars for the next biennium. This budget increase was accomplished with no new taxes.

During the 23 and one-half week session, in excess of 40 bills introduced directly or indirectly concerned the OSMA. A digest of bills introduced which were of interest to the medical profession and which were under surveillance by the OSMA Legislative Committee were as follows:

Senate Bill 295

S.B. 295, co-authored by Senators Ritzhaupt and Rogers, was of utmost importance to the medical profession. The bill amended the Oklahoma Medical Examiners Act by requesting an appropriation which would enable the hiring of a full-time

Medical Examiner and an assistant as well as the establishment and maintenance of a central office. Moreover, the initial biennium appropriation request of \$207,000 called for transferring the financial responsibility for autopsies and county medical examiners' fees to the Board of Unexplained Deaths, rather than leaving the burden with each of the 77 counties. The measure had the blessing of the OSMA House of Delegates.

Even though the OSMA Legislative Committee was not completely successful in obtaining the optimum appropriation, it managed to pass S.B. 295 in both Houses only two days before sine die adjournment. It was signed into law by Governor Bellmon on June 19 with an appropriation of \$84,000 for the biennium.

According to Rex E. Kenyon, M.D., OSMA Council on Public Policy Chairman, "Both the Speaker of the House of Representatives, Representative J. D. McCarty of Oklahoma City and Appropriations Committee Chairman of the House, Representative Carl Williams of Sulphur are to be commended by the physicians of Oklahoma for their last minute efforts in seeing that S.B. 295 was supplied with the \$84,000 appropriation."

"For on June the 12th," Doctor Kenyon continued, "S.B. 295 technically died in the Joint Conference Committee, composed of House and Senate members, and was revived, almost completely, through the initiative and interest shown in the matter by Speaker McCarty and Representative Williams."

"While more money is needed," the Public Policy Chairman concluded, "\$84,000 is a good start, and will keep our Medical Examiners Act alive until the next legislative session."

Senate Bill 26

Senate Bill 26, authored by Senator Louis H. Ritzhaupt and others has been signed into law by the Governor. S.B. 26 establishes a new public health code in Oklahoma.

For the most part, S.B. 26 reorgan-

Kingfisher Physician Honored



John W. Pendleton, M.D., Kingfisher physician (center, above), was honored recently at the regular meeting of the Garfield-Kingfisher County Medical Society in Enid. Doctor Pendleton was presented a Fifty-Year Pin by the Oklahoma State Medical Association in recognition of over a half-century of devoted service to the medical profession. Pictured with Doctor Pendleton are C. M. Hodgson, M.D., (left) Kingfisher, and Herbert Shields, M.D., Enid, President of the Garfield-Kingfisher County Medical Society.

izes, in orderly fashion, existing statutes, deleting obsolete provisions in conflicting sessions, filling in gaps and modernizing some provisions.

In only two instances does the act depart from major respects the program activities and administrative procedures carried on under the old code.

Of major importance is the creation of a county board of health in each of the 77 counties. County boards will consist of five members and will officially carry out the functions and duties previously carried out by county commissioners.

The OSMA and other allied groups successfully headed off an attempt to place a chiropractor on the State Board of Health as well as to permit them to serve on county health department boards.

Under the new Code, the law requires the appointment of four medical doctors to the State Board of Health as compared to five previously. The remaining five members may also be doctors of medicine if the Governor so chooses (at the present, six are physicians).

Senate Bill 57

S.B. 57 was passed and signed into law. The new law authorizes county commissioners to lease a county hospital to a charitable nonprofit organization and to appoint a five member board of control, selected from citizens residing in the county.

The OSMA Legislative Committee opposed a section of the bill which would have prohibited a licensed physician from serving on the hospital board of control. This section of the bill was stricken before its passage.

Senate Bill 212 and House Bill 683

Both S.B. 212 and H.B. 683 were written with a similar intent.

Either bill would have required the hiring of a business administrator for the Department of Mental Health as well as business managers for state mental institutions. The OSMA opposed these measures on the grounds that sole administrative authority should be under the direction of doc-

tors of medicine, trained in mental health work.

Both bills died in committees.

House Bill 579

H.B. 579 was amended several times in committee, finally passing and allowing the Board of Nurse Registration to fix the annual renewal fee of registered nurses and licensed practical nurses, not to exceed \$10.00.

Initially, the bill required mandatory licensure of all persons practicing professional nursing and made it unlawful to practice unless licensed as an R.N. or L.P.N. Further, fines would be imposed against employee and employer if non-licensed persons practiced nursing. The OSMA Legislative Committee opposed this section of the bill, as being impractical to enforce, and the section was stricken by committee before the bill's passage.

House Joint Resolution 535

H.J.R. 535, a legislative proposal to submit a \$7 million bond issue to a vote of the people for the purpose of constructing a new hospital for the University of Oklahoma Medical Center, passed both houses unanimously and was signed by the Governor.

The House of Delegates supported a reference committee recommendation at the last OSMA annual meeting in Tulsa, to take no stand on the issue which was one of the stormiest matters considered by the OSMA policy making body.

House Bills 768 and 769

H.B. 768, passed by the Legislature and signed by the Governor, allows a doctor of medicine and all other professional persons defined in the Professional Corporation Act, to serve as a director of more than one professional corporation so long as the individual is duly licensed to render the same specific professional services as those for which the corporation was organized. The original act discriminated against a solo practitioner, who frequently found it impossible to incorporate.

H.B. 769 also amends the Professional Corporation Act by adding dentists to the list of professional

persons who may incorporate under the act's provisions. This measure has been signed by the Governor.

Other Legislative Action

The following is a concise digest of other legislative bills, their authors and the action taken by the Senate, House and/or Governor.

S.B. 103—Ritzhaupt—Creating a Medical Research Commission composed of the Dean of the Medical School, the Executive Vice-President of the Oklahoma Medical Research Foundation, the Director of Oklahoma Medical Research Institute, the Director of Mental Health and Retardation, and the Commissioner of Public Health. The Commission shall supervise and control all medical research projects in state institutions, such as the penal institution in McAlester. **Gov/Signed.**

S.B. 105—Ritzhaupt—Making second offense for unlawful practice of healing arts a felony. Killed.

S.B.—106 — Ritzhaupt — Remove five-year limitation on probation time relating to licenses to practice medicine. Gov/Signed.

S.B. 107—Ritzhaupt — Fixing license to practice medicine renewal fee at not more than \$10 per year. Gov/Signed.

S.B. 206 — McComas — Eliminating civil liability for negligence of persons who render emergency care at the site of an accident, including first aid measures by non-licensed persons. (Good Samaritan). Gov/Signed.

S.B. 241 — Rogers — to prohibit discrimination by insurance companies among licensed practitioners of healing arts. Gov/Signed.

H.B. 548—Authorizing county judge to perform duties of coroner when none is available. Struck.

H.B. 567—Cox—Creating interdepartmental social services advisory committee. Gov/Signed.

H.B. 572—Cox — Authorize industrial court to designate physicians for injured employees under workmen's compensation law. Killed.

H.B. 701—Skaggs—Provide driver license medical advisory committee. Killed. □

Reporting of Professional Liability Claims

Too often the doctor, rather than recognize he is headed for trouble with his patient, will hide his head in the sand and say to himself, "The problem will go away. Why worry about it. I have done nothing wrong, and besides it might be embarrassing to explain the details to my colleagues much worse to laymen who won't understand the problem anyway."

Unfortunately, if he follows this line of thinking, he leaves his insurance company only two alternatives when claim is made; either outright disclaimer of coverage under the terms of the policy contract, or continue to handle under a "reservation of rights agreement" until such time as it can be determined if the company's rights have been affected by the delay in reporting.

What are the company's rights? Actually they are quite simply stated as a written notice upon the insured becoming aware of any alleged injury covered by the policy as soon as practicable, together with the fullest information available.

Here are some actual case citations on this subject:

- "The words 'as soon as practicable' as used in a contract requiring that it should be performed as soon as practicable are almost synonymous with 'speedily'." *Roberson v. Weaver*, 89 S.E. 769, 145 GA. 620.

- "The word 'practicable' means 'feasible.' An act is practicable of which conditions or circumstances permit the performance." *Rizer v. People*, 69 P. 315.

- "It is well settled that 'immediately' means 'as soon as practicable' and, conversely, it is proper to construe 'as soon as practicable' to mean 'immediately.'" *Chicago, B & Q R.R. v. Richardson County*, 100 N.W. 950.

Where a doctor has no knowledge whatsoever that his client is, in any way, dissatisfied with his treatment yet claim is, in fact, instituted, it is

rare, if ever, that any insurance carrier would invoke the notice condition of the policy. However, as a word of caution in such situations, further investigation might disclose to the carrier that the doctor should have known that a claim was likely to develop. It is to be remembered that it is not always a question of what knowledge is actually possessed but often times an insurer has been allowed to deny coverage under circumstances whereby the insured by reasonable attention to the situation should have known.

Experience has clearly shown the vital necessity of reporting claims as soon as practicable not only from the standpoint of securing policy coverage but to afford the insurer the opportunity of rendering the service and protection which the insured is entitled to under that contract. Prompt reporting means that claims personnel can get into action immediately at a time when control is so important. Many potential lawsuits can be avoided when handled by experienced claims men. Furthermore, it is always easier to investigate a potential malpractice claim when prompt attention to reporting is provided. It is an established fact that in some cases records have been lost or destroyed, valuable evidence distorted, and stories of the claimant oft times change with time. Prompt reporting is the one big tool to combat all of this.

How, then, does the doctor judge what will or will not be reported? Certainly he should immediately report the obvious situation, such as surgical accident. As an example, while performing gall bladder surgery the common duct is severed. Something has happened in addition to or unrelated with a specific surgical intent. Once the doctor determines that his patient is experiencing post-operative problems emanating from accident, it should be a warning to him to notify his insurance company. Certainly if the doctor was

involved in an automobile accident involving personal injuries he would have no hesitancy in reporting it to his insurance company.

Regardless of whether or not the doctor feels his patient has a legitimate grievance, if he finds there is something just a little irregular in the outcome of treatment or surgery, notice should be given. Another example is where the patient complains beyond the normal degree about the method of treatment, or where the doctor recognizes the unusual or where perhaps a little less than normal result has taken place and the patient has sought advice with another doctor. Certainly if any threat is made as to the way a case was handled, it is a matter for his insurance carrier's attention. Just because the matter is reported to the carrier does not mean that the company will establish a formal claim file, as a conference with the doctor might, on the contrary, indicate no real basis for concern.

It should always be kept in mind that a reported incident is treated as confidential information by the carrier. Such matters are never discussed with people beyond the confines of the parties involved, and, thus, there should be no embarrassment.

The practice of medicine is not an exact science and human errors are bound to occur. When they do, experience shows it is better to recognize the problem whether it be simply an error in judgment or surgical accident. Thus, the doctor should always permit the company to help carry his burden. This is why he buys insurance.

Doctors should report claims directly to their insurance carrier or to the company's agent from whom they purchased their professional liability coverage. Since most Oklahoma physicians are protected by St. Paul Fire and Marine Insurance Company, the company claims offices are: Oklahoma City, 2000 Classen Boulevard, telephone JACKSON 5-6511; Tulsa, 1307 South Boulder, telephone LUTHER 4-6481. □

Ninety Graduate From University of Oklahoma School of Medicine

Ninety students graduated from the University of Oklahoma School of Medicine at commencement June 9 in Holmberg Hall on the Norman campus.

A new first year class of 104 men and women has been accepted for admission and will enroll September 5. They were chosen from some 450 applicants, an increase of nearly 100 over the previous year.

Principal senior honors this year went to Richard Timothy Coussons, M.D., recipient of the L. J. Moorman Award to the graduate having shown the greatest scholarly attitude in medicine; and Enrique C. Chaves, M.D., the Onis George Hazel Award reserved for the student who most nearly approaches the ideal doctor-patient relationship.

Doctor Coussons also won a Merck Manual Award for outstanding achievement and a Mosby Scholarship Book Award for academic excellence. Earlier the new physician had received the Roche Award, the Russo Award in X-Ray Anatomy, and the Mark R. Everett Award for scholarship and intellectual promise as a sophomore. He was 1962-63 president of Alpha Omega Alpha.

Harry B. Tate, M.D., was presented the Merck and Mosby citations and also the Oklahoma City Surgical Society Award to the highest ranking senior in surgery. He won the Pfizer Laboratories Medical Scholarship last fall.

Others receiving honors:

Mosby Scholarship Book Awards: William John Hale, M.D., John Patrick Evans, M.D., and Dennis Allen Weigand, M.D. (Doctor Weigand was chosen for the Coyne H. Campbell Award for outstanding scholarship during his third year.)

Mrs. Eugene Fay Lester Senior Book Award, for consistent effort and dedication as a medical student: Raymond O. Smith, M.D.; Student Research Achievement Award, based on an original investigation and thesis: Ronald Wayne Strahan, M.D.

American Academy of Dental Med-

icine, for achievement and promise in the field of dental medicine: Richard Earl Morris, M.D.

Members of the graduating class and their internship appointments are as follows:

Thomas C. Alexander, M.D., Maricopa County General Hospital, Phoenix, Arizona; Russell F. Allen, M.D., St. Francis Hospital, Wichita, Kansas; Robert L. Allred, M.D., U.S. Public Health Service, Norfolk, Virginia; Paul A. Barrett, M.D., Wesley Hospital, Wichita, Kansas; Kent D. Bealmear, M.D., St. Louis University Hospitals, St. Louis, Missouri; Bruce G. Bell, M.D., St. Anthony Hospital, Oklahoma City; Delta W. Bridges, M.D., Mercy Hospital, Oklahoma City; Harold L. Brooks, M.D., VA Hospital, Oklahoma City; Donald T. Butts, M.D., University of Oklahoma Hospitals, Oklahoma City; Robert L. Casey, M.D., Swedish Hospital, Seattle, Washington;

Enrique C. Chaves, M.D., Gorgas Hospital, Canal Zone; Dan E. Chesnut, M.D., Good Samaritan Hospital, Phoenix, Arizona; Rosser R. Cole, M.D., St. Anthony Hospital, Oklahoma City; Royce M. Cole, M.D., Santa Barbara Cottage Hospital, Santa Barbara, California; Richard T. Coussons, M.D., Johns Hopkins Hospital, Baltimore, Maryland; Wallace W. Coyner, M.D., Lakeland General Hospital, Lakeland, Florida; James W. Crawford, M.D., Bernalillo County Hospital, Albuquerque, New Mexico; John M. Currie, M.D., Good Samaritan Hospital, Portland, Oregon; Forrest M. Darrough, M.D., Swedish Hospital, Seattle, Washington; John E. Disiere, M.D., St. Anthony Hospital, Oklahoma City; Ronald J. Donaldson, M.D., Brooke Army General Hospital, Fort Sam Houston, Texas; Richard E. Doner, M.D., Mercy Hospital, Oklahoma City; Charles K. Doran, M.D., U.S. Public Health Service, San Francisco, California; Roy W. Dowdell, M.D., Mercy Hospital, Oklahoma City;

Gary G. Evans, M.D., St. Johns Hospital, Tulsa; John P. Evans, M.D., University Hospital, Ann Arbor, Michigan; Elwood D. Everett, M.D., University of Oklahoma Hospitals, Oklahoma City; Donald P.

Ferrell, M.D., Maricopa County General Hospital, Phoenix, Arizona; John A. Garis, M.D., St. Anthony Hospital, Oklahoma City; John L. Glomset, M.D., Wesley Hospital, Oklahoma City; Lloyd D. Gooch, M.D., Hermann Hospital, Houston, Texas; Jack P. Gunter, M.D., University of Arkansas Hospital, Little Rock, Arkansas; William J. Hale, M.D., U.S. Public Health Service, New Orleans, Louisiana; Sam T. Hamra, M.D., University of Oklahoma Hospitals, Oklahoma City; Norman N. Hanks, M.D., St. Anthony Hospital, Oklahoma City; Larry E. Hawkins, M.D., Michael Reese Hospital, Chicago, Illinois; James R. Hefner, M.D., St. Francis Hospital, Wichita, Kansas;

James A. Hill, M.D., St. Anthony Hospital, Oklahoma City; Royce A. Hinkle, M.D., St. Anthony Hospital, Oklahoma City; Edwin G. Horne, M.D., U.S. Naval Hospitals, San Diego, California; Luverne A. Husen, M.D., U.S. Public Health Service, Staten Island, New York; J. Clark Jones, M.D., St. Anthony Hospital, Oklahoma City; Michael G. Keeran, M.D., University of Michigan Hospital, Ann Arbor, Michigan; Noah C. Kimball, M.D., Maricopa County General Hospital, Phoenix, Arizona; Charles P. Kirkland, M.D., USAF Hospital, Lackland Air Force Base, Texas; Charlyce A. Klepper, M.D., Mercy Hospital, Oklahoma City; Steve A. LeValley, M.D., Denver General Hospital, Denver, Colorado; Cary L. Leverett, M.D., U.S. Naval Hospitals, Oakland, California; Larry L. Long, M.D., Mercy Hospital, Oklahoma City; Warren D. Long, M.D., Wesley Hospital, Oklahoma City.

Dan M. Mackey, M.D., University of Virginia Hospitals, Charlottesville, Virginia; John H. Marsh, M.D., St. Johns Hospital, Tulsa; Clarence A. Martin, M.D., Presbyterian Hospital, Denver, Colorado; Richard E. Morris, M.D., Methodist Hospital, Dallas, Texas; Jerry F. Morrow, M.D., San Francisco Hospital, San Francisco, California; Billy J. Neal, M.D., Denver General Hospital, Denver, Colorado; Victor W. Neugebauer, M.D., Mound Park Hospital, St. Petersburg, Florida; Wade Norman, M.D., U.S. Public Health Service, New Orleans,

Louisiana; Michael J. Patton, M.D., Baylor University Hospital, Houston, Texas; Charles L. Payne, M.D., St. Anthony Hospital, Oklahoma City; Willis F. Phelps, M.D., St. Johns Hospital, Tulsa; Sam L. Pool, M.D., St. Johns Hospital, Tulsa; William J. Preston, M.D., Wesley Hospital, Oklahoma City;

Bert T. Reed, M.D., University of Oklahoma Hospitals, Oklahoma City; Jerome Reichenberger, M.D., Providence Hospital, Seattle, Washington; Gerald R. Reimer, M.D., Good Samaritan Hospital, Portland, Oregon; Robert E. Ringrose, M.D., U.S. Naval Hospitals, Oakland, California; Don A. Rockwell, M.D., San Francisco Hospital, San Francisco, California; David S. Russell, M.D., St. Johns Hospital, Tulsa; Charles R. Saylor, M.D., University of Texas Medical Branch Hospitals, Galveston, Texas; Clarence Shields, M.D., Mercy Hospital, Oklahoma City; Raymond O. Smith, M.D., University of Texas Medical Branch Hospitals, Galveston, Texas; Roger L. Smithpeter, M.D., Santa Barbara Cottage Hospital, Santa Barbara, California; Phil Stamps, M.D., St. Johns Hospital,

Tulsa; Thomas M. Stanley, M.D., University of Pennsylvania Hospitals, Philadelphia, Pennsylvania; Harlin K. Stonecipher, M.D., Methodist Hospital, Dallas, Texas; Ronald W. Strahan, M.D., Denver General Hospital, Denver, Colorado;

Harry B. Tate, M.D., USAF Hospital, Andrews Air Force Base, Washington; James S. Turner, M.D., University of Oklahoma Hospitals, Oklahoma City; Taylor D. Wagner, M.D., University of Oklahoma Hospitals, Oklahoma City; Larry W. Weidner, M.D., St. Anthony Hospital, Oklahoma City; Dennis A. Weigand, M.D., St. Francis Hospital, Wichita, Kansas; Nelson P. White, M.D., St. Johns Hospital, Tulsa; Ronald H. White, M.D., St. Anthony Hospital, Oklahoma City; Wes A. Whittlesey, M.D., Santa Clara Hospital, San Jose, California; David R. Willhoite, M.D., Mound Park Hospital, St. Petersburg, Florida; Dorothy A. Wood, M.D., Jackson Memorial Hospital, Miami, Florida; George A. Wootan, M.D., Lakeland General Hospital, Lakeland, Florida; Clarence C. Young, M.D., University of Oklahoma Hospitals, Oklahoma City; Larry I. Young, M.D., Maricopa County General Hospital, Phoenix, Arizona.

NURSING HOME . . .

(Continued from Page 306)

providing him with a hope in order that his pleasure in living not be destroyed.

We are cognizant of the fact that hospitals developed from places where patients went to die into the modern institution of healing and rehabilitation. Nursing homes are on the threshold of developing from institutions offering bare custodial care into real homes offering emotional support as well as a bed, meals, and nursing care. Hospitals utilized the volunteer to add to technical care a spirit of kindness and attention to a patient's small personal comforts. The nursing homes are in the process of utilizing the volun-

teer to give warmth and attention and to give it freely and unhurriedly, in order that some of the loneliness and bitterness of the patients can be dispelled. The trained volunteer serves an indispensable role in the restoration and rehabilitation service. An adequate volunteer program can well mean the difference between hopelessness and realistic adjustment to the nursing home patient.

The function of the present day nursing home in the community may well be that it is now a place to live and not a place to die.—E. O. Hawley, *Past President, Oklahoma State Nursing Home Association* □

DEATHS

ELBERT V. WINNINGHAM, M.D.
1907-1963

Ardmore radiologist, Elbert V. Winningham, M.D., died in Holbrook, Arizona July 3, 1963.

A native of McAlester, Oklahoma, Doctor Winningham graduated from the University of Oklahoma School of Medicine in 1949. After a three-year residency in radiology, he established his practice in Oklahoma City. In 1955, he moved to Ardmore.

Doctor Winningham was a member of the Oklahoma State Radiological Society and the American College of Radiology.

HAROLD W. HACKLER, M.D.
1906-1963

Harold W. Hackler, M.D., Norman psychiatrist, died April 29, 1963.

Born in Westville, Oklahoma, Doctor Hackler graduated from the University of Oklahoma School of Medicine in 1933.

Following private practice in Pryor, Oklahoma, Doctor Hackler entered Indian Service and was located in Montana and New Mexico before serving with the Armed Forces from 1942-1946. He then joined the staff at Central State Hospital in Norman where he was working at the time of his death.

Doctor Hackler had been an instructor in psychiatry at the University of Oklahoma School of Medicine.

Connally Named SAMA President

Jack D. Connally, Stratford, will serve as Student American Medical Association president during the coming academic year at the University of Oklahoma School of Medicine.

Connally, who will be a second year student, succeeds Don Ferrell, M.D., Amorita, member of the 1963 graduating class. New SAMA vice president is James Finley McMurry Jr., fourth year student from Oklahoma City.

A delegation of some 20 medical students attended the annual SAMA convention this spring in Chicago. □

BOOK REVIEWS

CLINICAL DISTURBANCES OF RENAL FUNCTIONS. By Abraham G. White, Philadelphia, W. B. Saunders Company, 1961, pp. 468.

This book is directed at the "practicing physician confronted by a patient whose kidneys are not functioning normally . . . (and) . . . is meant to help the doctor attain insight into what the patient is suffering from, and what to do for him." This is certainly a laudable aim, particularly when the author intends purposely to stress physiological orientation, and wishes to emphasize the "totality of the patient, that the kidneys are but one organ system among many, albeit a very important one." Living up to such a promise is indeed difficult, and to the sorrow of this reviewer as well as the loss to the practicing physician, the author fails to hit his target. Certainly the review of renal physiology given in the opening chapter is good, and the diagnosis clear, but the application of these to the clinical findings is weak.

The clinical descriptions of disease are all too brief, and the "clinico-physiologic correlation" sections usually deal at some length with a single such correlate, then mentioning others very superficially or not at all. The sections on diagnosis and management are certainly adequate but are not outstanding. It is indeed a tragedy that the ultrastructure of a normal glomerulus as seen by electron microscopy is now shown for comparative purposes since there are many representations of disease states.

No attempt is made to correlate the glomerular basement membrane changes with the presence of proteinuria, certainly one of the exciting findings of widespread significance in the field of renal disease. Omissions such as the role of renal biopsy in selecting patients with the nephrotic syndrome for adrenocortical steroid therapy are startling and unfortunate. Similarly, omissions of discussion of the role of the magnesium ion in the uremic state; and the precautions in the use of any

medicaments (orally or parenterally) in patients with acute renal failure are lamentable.

However, the sections on renal physiology in pregnancy, and the relationships of the hemodynamics of the cardiovascular circulation to renal function in cardiac disease, in anesthesia, and in surgery are quite concise and worthwhile reviews.

The final sections of the book labelled as appendices, are too brief and suffer from this in that the precautions to be observed as to when they are contraindicated, or unreliable are either ignored or are too sketchy.

All in all, it is still a good book for the practicing physician primarily for its brief physiologic reviews and its bibliography, and on these grounds can be recommended.—*John P. Colmore, M.D.* □

THE BASAL GANGLIA AND THEIR RELATION TO DISORDERS OF MOVEMENT. By D. Denny-Brown, London, Oxford University Press, 1962, pp. 144.

The present volume is the second in the newly established series "Oxford Neurological Monographs." Previously there appeared "Traumatic Aphasia" by Ritchie Russell. Both of these volumes are beautifully reproduced, clearly printed and well illustrated. The price is moderate, as medical books go.

Doctor D. Denny-Brown, Putnam Professor of Neurology at Harvard Medical School, has previously written a monograph "Diseases of the Basal Ganglia and Subthalamic Nuclei" in 1946, and long since out of print. His interest in these bewildering disorders producing involuntary movements and changes of posture has continued, and he has reported on his investigations in the Croonian lectures of the Royal College of Physicians in 1960. These lectures, greatly extended, are published in the present volume.

As Doctor Denny-Brown points out in the preface, the Croonian lectures

have in the past been "the medium for the presentation of many of the classical expositions of British Neurology." The main emphasis of the present volume rests on the correlation of clinical, physiological and pathological data, both from autopsy material and from the intentional production of pathological lesions in animals.

The book begins with a chapter entitled "Introduction and Anatomical Considerations," which presupposes on the part of the reader a more than passing knowledge of neuroanatomy. The next chapter discusses the pathology of the disorders commonly called "extrapyramidal syndromes," and relates the pathological changes to disturbances of posture and involuntary movements. The result of focal lesions in the basal ganglia, the interrelationship of various disorders of posture and of movement and the results of experimental lesions in monkeys are considered in other chapters. There is no consideration of the chemical aspects of the disorders of the basal ganglia or of their pharmacology. Aside from the case report of an old man who developed "Parkinsonian rigidity" after the administration of Thorazine, the effect of tranquillizing drugs on posture and movements is not considered. Yet, through the side effects of these drugs many practitioners have their most intimate and frightening contact with the disorders under discussion. The book is richly illustrated, and extensive references are provided, many of which are critically examined in the text.

This is not an easy book to read. Its intent is not to discuss the full nosological picture of the "Diseases of the Basal Ganglia," their genetic implications, nor their treatment. Nor does it attempt to discuss the effect of surgical approaches to the basal ganglia and their physiological implications. Yet, there is much of great interest. The main appeal of this book will be to the physician in the neurological sciences.—*Gunter R. Haase, M.D.* □

Miscellaneous Advertisements

WANTED general practitioner or internist for group practice opportunity in expanding community. Write Administrator, The Chickasha Clinic, Box 1069, Chickasha for complete details. Inquiries kept confidential.

COMPLETELY equipped clinic building for sale or lease in Atoka, Oklahoma. Central heating and air-conditioning. 2,700 square feet. Available July 1, 1963. Call or write Mark Mills, R.R. 2, Durant. WA 4-0503.

FOR SALE: Westinghouse, 500 M A, 150 KV Diagnostic machine. Complete with tables, transformer, control stand, new motor-driven Capri table, six inch amplifier, Nassau spot film device and photo-timer. Will consider any offer. Contact B. E. Mulvey, M.D., R. B. Price, M.D., or C. G. Coin, M.D. Phone CE 5-0511 or CE 6-4501, Oklahoma City.

OUTSTANDING opportunity for a doctor or group of doctors to step into well established practice with a minimum of expense. Located 85 miles southwest of Oklahoma City, Carnegie has tri-county trade area of 15,000 people. Recent \$160,000 bond issue passed for purchasing and modernizing 20-bed hospital. Contact C. B. Sullivan, M.D., Carnegie, Oklahoma.

GENERAL PRACTITIONER needed in Billings, Oklahoma. Population approximately 600, with large trade territory. Five room doctor's office available. Hospital facilities available at Enid, Perry and Ponca City. Billings is located in rich wheat belt country. Excellent potential for a good M.D. Call or write: Aubrey Tipton, P.O. Box 246, Billings, Oklahoma. Phone RA 5-3424 or RA 5-3284.

OFFICE SPACE for rent, five-room suite, northwest area, Oklahoma City. Share reception room with established practitioner. Excellent opportunity for general practitioner, or specialist. Contact Elmer Rdigeway, Jr., M.D., 3601 North May. WI 3-3344.

AVAILABLE opening for practice for physician in group practice, southeast Oklahoma. Contact Business Manager, Reed Wolfe Clinic, Hugo, Oklahoma.

IDEAL doctor's office space available, with excellent parking, street level, no elevator or stairs. Carrier central air conditioning, all utilities and janitor service furnished. 527 sq. ft. in the Plaza Medical Building at 10th and North Dewey, directly across from St. Anthony Hospital. Call Mrs. Fuller, CE 5-3224.

WANTED: General practitioner or internist to join established group. New clinic building with complete facilities. Excellent small community. No investment required. Call or write F. W. Hollingsworth, M.D., Canadian Valley Clinic, El Reno, Oklahoma. Phone AN 2-2114.

WANTED: Ophthalmologist or EENT to join six physician group in western Oklahoma. No investment. Guaranteed annual income \$20,000. Contact Alex Shadid, M.D., Community Hospital-Clinic, Elk City, Oklahoma.

WANTED: Internist, with interest in cardiology, to take over established practice of Ray B. Graybill, M.D., deceased. Contact: Mrs. Ray B. Graybill, CA 3-1800; CA 3-1313 or C. D. Cunningham, M.D., CA 3-8210.

CLINIC BUILDING for lease, 1,250 square feet floor space, six rooms, four-ton air conditioner. Reconditioned 100 milliamperage X-ray for sale, if needed. Located 308 N.E. 1st, Pryor, Oklahoma. Contact Warren G. Gwartney, M.D., Harvard Village, Professional Building, 2570 South Harvard, Tulsa, Oklahoma.

FOR SALE clinical camera with enlarger. Contact Mrs. Peter E. Russo, VI 3-4953.

SOLO G.P. needs G.P. associate. Clinic facilities and hospital available. City of 4,500 with trade area of 10,000, convenient to Oklahoma City and Tulsa. No investment necessary. Salary for six months, percentage thereafter with minimum guarantee, to full partnership. Car furnished. Contact C. E. Woodard, M.D., Drumright. Telephone Area Code 918, Flanders 2-2555.

PEDIATRICIAN, 1958 graduate of the University of Oklahoma School of Medicine, will be available for private practice July, 1964. Interested in either group or solo practice in any Oklahoma town, 25,000 population or more. Contact Robert T. Dooley, M.D., U.S. Naval Hospital, Jacksonville, Florida.

LOOKING FOR a G.P., or an M.D., not averse to doing G.P., as a Locum Tenens for two or three months this summer, while I am on short term medical mission service. Will furnish comfortable home and office, rent free, and will give all net proceeds from practice. Ideal situation for man finishing residency and awaiting assignment to service. May be able to adjust time to suit applicant's situation. Contact A. C. Hirshfield, M.D., 908 N.E. 50th Street, Oklahoma City 5, Oklahoma.

ONE OF THE GREATEST occupational hazards in the practice of medicine is the danger that a doctor may lose his humility.

A carpenter leaves his building materials in the evening and returns the next morning not expecting to find them assembled into a finished house. A common laborer knows that a mountain of dirt will not disappear simply because he worked on it with a shovel for a few hours. Their work is concerned with tangible, comprehensible things.

A surgeon however, operates a patient and on the basis of past experience confidently expects him to recover within a few days. A colleague finds a medical disease, prescribes "appropriate" treatment and not long afterwards finds his patient well. One way or another most people recover from most of the diseases that beset them during a lifetime. Only one illness is ever fatal for any "patient," therefore everybody usually recovers so the odds are all in the doctor's favor. It has been so since the beginning of time thus it is a natural tendency for doctors to come to depend on miracles as a matter of course.

They have not been helped in this struggle by the literature or by their patients who often say that Dr. X "saved my life." They rarely state it accurately, namely that Dr. X "helped to save my life." A genuine, conscious humility toward the human body and its diseases is rare.

Dr. Always A. Diagnosis never sees a symptom without a clear-cut explanation. Dr. Cut Email finds that surgery is the panacea for most afflictions and—except when he is the patient—the results are uniformly good. Dr. Regular Cure has a sure-fire treatment for every disease. Just ask them, usually they can produce impressive statistics to justify their enthusiasm.

From visible success in the medical field it is not hard for a confident man to presume competence in other fields too. When he looks over the astounding results of his intricate treatments and sees the high percentage of recoveries, he consciously or unconsciously, assumes that his efforts were the deciding factor in a patient's recovery. It

is not surprising that physicians have trouble learning to distinguish between results in their Divinely-helped profession and other fields which are not so blessed.

In the realm of economics and finance there are many pseudo-experts among doctors. They talk such a good line that one suspects they practice medicine as a hobby until professionals, real experts in the fields, advise us that doctors are a "softer sell" for shaky investments than any other group. In some circles there is a saying that if doctors are investing in a company it will probably go broke. Doctors' reputation in the world of finance is not enviable. How many doctors are financially secure because of their business investments?

The petroleum industry and agriculture particularly have absorbed many physicians' hard-earned dollars. Generally their returns are in the form of education rather than money in the bank. Do physicians ever retire to manage their sprawling farms or to superintend a string of flourishing oil wells?

In politics, or more properly statesmanship, there is the greatest number of doctor-experts. Political erudition among doctors seems to be as important as football. As a whole, the medical profession spends a great deal of time studying and thinking about the problems of the United States and the world. Many good thoughts and intriguing proposals are voiced over coffee and at medical meetings. Unfortunately most of these ideas are as transient as the words in which they are spoken. In fact, it seems a major effort for most physicians merely to "write a congressman" much less to stand for public office where—if we are to believe what we hear—our physician-expert could do a great deal to alleviate the ills of the world. Very few doctors have the courage of their apparent convictions.

Sir William Osler wrote that to practice medicine without books is to sail an uncharted sea while to study medicine with-

out patients is never to go to sea at all. In a similar manner the physician who treats illness without ever a thought for his own insignificant part in the healing process must lose his sense of balance in the great scheme of things. His pride grows on a sandy foundation and slops over into unrelated fields.

Clearly a doctor's importance in the course of any disease is important but it is susceptible to over-emphasis, especially in his own mind. A man must continue weighing the essential and the superfluous, he must retain a kind of perspective. Ambrose Pare, the Medieval French physician, expressed the principle when he said, "I dressed his wounds but God healed them."—C.B.D. □

Referendum on Compulsory AMA Membership

SOME 931 physician-members of the Oklahoma State Medical Association favor compulsory membership in the American Medical Association; 456 oppose compulsory membership. These are the recorded results as of July 1 of the mail referendum conducted among dues-paying members of the Oklahoma State Medical Association in June. It would thus seem apparent that this particular question may be safely laid to rest for an indefinite period. The return of 1,387 replies out of a total of some 1,756 cards sent out is in itself astounding and reflects the keen interest of physicians over the state in this proposition. Some polls are considered successful if ten per cent replies are obtained, and referendums by the Oklahoma State Medical Association on other questions in the past have resulted on occasion in barely a 50 per cent return. This 80 per cent return of cards is an extremely high yield and should reflect the true opinion of the members at large. A letter sent out by President Duer accompanying the referendum vote cards to every member listed the total membership of the Oklahoma State Medical Association eligible for AMA membership as 1,915. This, of course, is in error, as there are only

1,756 full dues-paying members of our state medical association. The others are Honorary Life Members, etc., who are not eligible to hold office and who do not pay full dues. Doctor Duer indicated that the association needed less than 100 additional members to qualify us for another Delegate to the American Medical Association, but this is not so, as we are far short of the 2,000 members needed before consideration for a third delegate can be given. What effect Doctor Duer's obviously slanted letter urging support of compulsory membership had on the vote is, of course, unknown. It is also unknown what the opinions of the remaining 369 physicians who did not return cards might be. It is safe to assume, however, that the great majority of physicians in the Oklahoma State Medical Association desire membership in the American Medical Association as compulsory for Oklahoma doctors.—Walter E. Brown, M.D. □

Freedom's Key Club (cover)

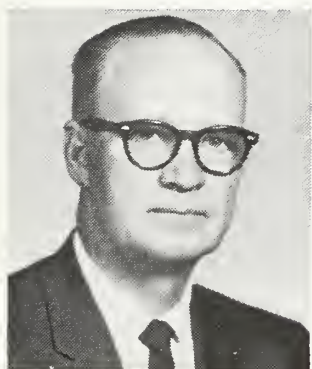
THERE'S A NEW Key Club open to doctors, wives and friends—but, wait, this one is really different! You pay the usual dues, then work your head off and no monkey business permitted.

Not interested? You'd better be, because the success of the Oklahoma Medical Political Action Committee is the *Key to your future*—to your professional and individual freedom!

OMPAC, like its national affiliate, the American Medical Political Action Committee (AMPAC), is dedicated to some rather basic principles of good citizenship: *Learn about politics—Practice your knowledge in the party of your choice—and, Throw every ounce of your mental, physical and financial might behind candidates who represent your political and social ideology!*

The King-Anderson threat is imminent, and so are the 1964 elections. What the short range legislative future holds for us remains to be seen, but we must acknowledge the certainty of a bleak road ahead if we surrender representative government by permitting others to select and direct a hostile Congress.

Turn the Key with OMPAC and AMPAC! □



The greatest problem before the medical profession today lies in the field of medical economics. The problems in legislative proposals—the schemes and plans for the centralized control of all parts of our lives—are being met with fair chances of success.

Those dealing with voluntary prepaid methods are being increased in efficiency and scope. The need for more legislative efforts is decreasing even though the fight continues with increasing tempo and fury.

Our internal struggle is not being faced and solved as well as it should be—and therein we ourselves fail—both in the solution of our problems as well as in the creation of a more acceptable image.

I refer more specifically to such things as these—which we would like to deny—but which are realities that must be faced:

Exorbitant charges—as proof all you need to do is serve one time on a Blue-Shield professional advisory committee and see such charges as \$500 for removal of a sebaceous cyst!

Increasing charges when there is insurance coverage—ask the Grievance Committee if this happens.

False or fraudulent claims—there are documented records of charges for home calls on welfare patients for two or three months *after* the patient has deceased.

Insistence on payment when it is obvious that payment cannot be made—reread the May, 1963 statement of principle as passed by our House of Delegates.

The list could be extended indefinitely with related issues and subjects. Suffice it to say, that the load on our Grievance Committee is increasing and from the evidence at hand this increase is not enough to care for all situations.

Let each physician take an objective and honest inventory of himself and the problems would resolve themselves. Are your actions a bright part of the Image, or a dark spot?

Joe P. Lue, M.D.

The Problem of Vesicoureteral Reflux in the Management of Urinary Tract Infections in Children*

DONALD D. ALBERS, M.D.

A relatively new concept of importance

ALTHOUGH vesicoureteral reflux, the retrograde flow of urine from the bladder up the ureter, is not a new concept, renewed interest has helped clarify its importance in chronic or recurrent urinary tract infections^{1, 2}. The ureterovesical junction has a valve effect which ordinarily stops the retrograde flow of urine. This valve can be rendered incompetent by infection, bladder neck obstruction with resultant elevation of intravesical pressure and probably by congenital changes. Some generalities relative to this phenomenon of reflux seem evident.

It rarely occurs, if ever, in a normal urinary tract. When it occurs there is practically always some other urinary tract abnormality besides the reflux, such as, bladder neck obstruction, dilatation of the ureters, hydronephrosis and infection. When reflux does occur and the architecture of the ureters and renal pelves have been altered from nor-

mal by a significant degree of dilatation, such as ureters larger than one centimeter in diameter, it usually requires definitive surgical treatment. When the filled ureters are larger than one centimeter in diameter, surgical reconstruction of the ureterovesical junction to prevent reflux often results in obstruction at this junction. Since urinary tract infections are so common in children, particularly girls, and reflux is quite common in children with urinary tract infections, a few comments on the technique for determining reflux and on the influence of reflux on therapy seem warranted.

The simplest method of testing for reflux is to catheterize the child with a soft rubber catheter of appropriate (12-14 French) size, usually checking for residual urine at the same time. Then instill radiopaque material through this catheter by gravity. This can be done by pouring it into the glass portion of an asepto syringe with 15 to 20 centimeters elevation. One can dilute the organic iodides used for intravenous pyelography or retrograde pyelography so that the iodine content is around 15 per cent or use six per cent sodium iodide. This material is instilled into the bladder by gravity until there is an urge to void. At this time about an ounce more is injected using the bulb of the syringe following which the catheter is withdrawn,

*From Wesley Hospital Foundation.

the child encouraged to void and while voiding the roentgenogram is made. Low pressure reflux will be detected by taking a film before there has been an urge to void. It is usually advisable to make at least one additional exposure at the end of voiding and oblique ones may be helpful. If the child is not able to void, pressure exerted suprapubically will often initiate voiding. With straining and with added pressure from the hand a fair test for reflux has been made.

There are numerous refinements to this test which may be found to add valuable information in treating patients with reflux. Cinefluorography in which numerous exposures are made on moving film will undoubtedly pick up some instances of reflux that cannot be demonstrated by the simple procedure just described. Constant observation using the image intensifier or ordinary fluoroscopy while doing the cystogram and taking spot films is becoming the accepted technique in many centers.

Reflux may occur only with low pressures and in certain cases only with high pressures.³ Reflux which occurs only with high pressure is more apt to be benefited by revision of the bladder outlet. Patients with low pressure reflux are often doomed to suprapubic diversion. A small cannula can be inserted into the bladder suprapubically through a trochar to record pressures while doing these studies. This will give an accurate indication of the bladder pressure necessary to overcome the outlet sphincters and more accurately will indicate the pressure necessary to initiate reflux.

To illustrate how the presence or absence of reflux influences the management of children with urinary tract infections, cases will be presented as an effort to categorize the treatment.

SURGERY NOT INDICATED

This healthy-appearing six-year-old girl first seen in 1960 with a ten month history of urinary tract infection, was found to have a duplicated drainage system on both sides with otherwise essentially normal kidneys on intravenous pyelography. She was thought to have a tight urethra which was dilated to 24 French and was placed on sulfonamides for six months. When the sulfonamide was stopped she soon flared up

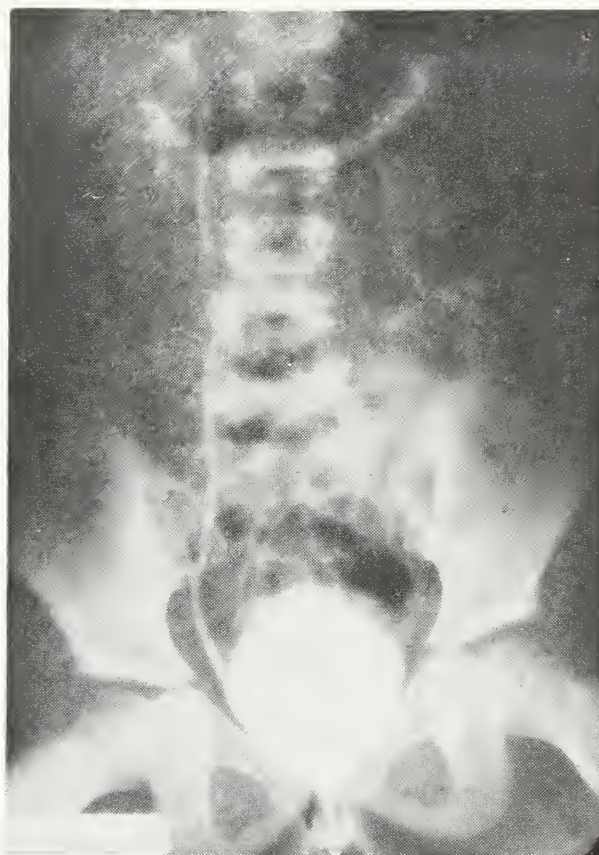


Figure 1. Voiding cystogram of six-year-old girl showing reflux up both segments of right duplicated urinary tract, but without significant dilatation.

with another infection. There was no residual urine and a voiding cystogram (figure 1) showed reflux up both ureters on the right, which did not appear to be significantly altered from normal. There was some reflux up the left also. This case is being presented to show voiding reflux which probably occurs with high pressure in a child with no significant residual urine but with recurrent infection. Treatment for this child consisted of dilatation of the urethra and medical control of the infection. She was followed at three month intervals with medicine being stopped every six months to see how she would respond. The reflux was checked yearly as was the intravenous pyelo-

Donald D. Albers, M.D., a graduate of Northwestern University School of Medicine, has been certified by the American Board of Urology. In addition to his private practice in Oklahoma City, he is Assistant Professor of Urology at the University of Oklahoma School of Medicine.

Doctor Alber's professional affiliations include the American Urological Association, the American College of Surgeons and the South Central Section of the American Urological Association.

gram. It took two years' followup to establish the validity of this approach and rule out the need for surgical treatment. Without any antibacterial medication she remains free of infection and reflux.

BLADDER NECK REVISION AND URETEROVESICAL REVISION

This seven-year-old boy was seen in 1960 with a two year history of urinary tract infections. He had been noted to strain to void and had a small stream. The intravenous pyelogram showed the right kidney to be smaller than the left with a fine calyceal pattern and no evident obstruction. The cystogram (figure 2A) showed significant reflux up both ureters but with definite dilatation of the pelvis and ureter on the right, suggesting anatomical change in these structures. He was found to have a meatal stricture at cystoscopy and meatotomy was performed. It was thought that this might be the source of all of his difficulties, so the meatus was kept adequately opened and he



Figure 2A. Voiding cystogram on seven-year-old boy showing reflux up both ureters but definite dilatation on right with marked dilatation of pelvis.

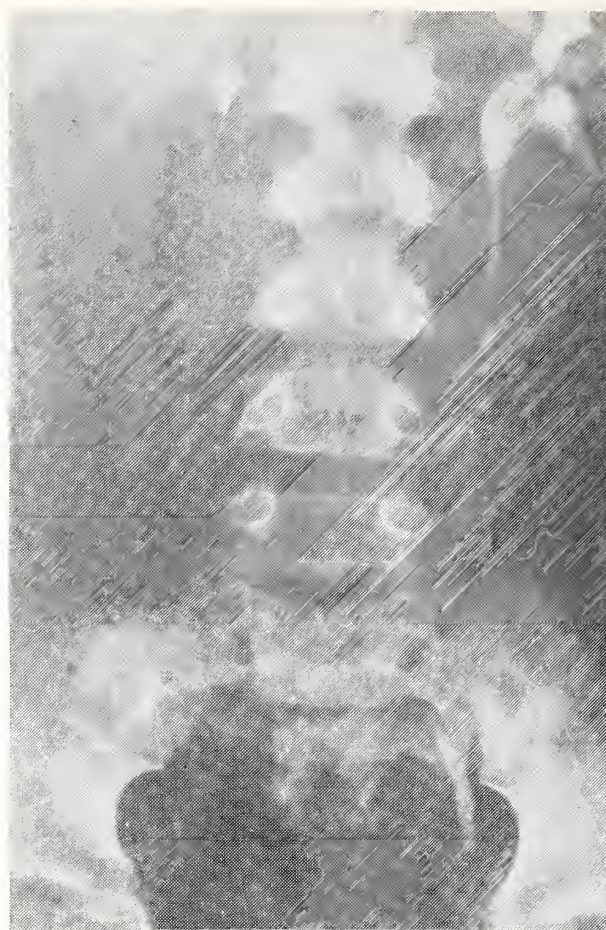


Figure 2B. IVP 14 months following surgery showing fine calyceal pattern in a smaller right kidney without obstruction, similar to original IVP.

was given continuous chemotherapy. Two years later another cystogram was made which looked very similar to the first, although he seemed to be getting along fine. It appeared that the reflux was well established on the right and probably related to an obstructed bladder neck. In view of this an operative procedure was carried out through a suprapubic approach to enlarge the bladder outlet and to revise the right ureterovesical junction in an effort to stop reflux. Follow-up studies 14 months later demonstrated good function of the kidneys (figure 2B) without dilatation, no reflux (figure 2C) up the right ureter but mild residual reflux up the left and no pyuria or bacteriuria after being off antibacterial medicine for eight months. The last intravenous pyelogram looked quite similar to the initial one. The tremendous dilatation of the right pelvis on the voiding cystogram initially compared to the somewhat atrophic right kidney with delicate unobstructed-appearing pelvis and calyces on the intravenous pyelogram is striking. This marked dilatation with the cystogram compared to no dilatation on the intravenous pyelogram points to the inadequacy



Figure 2C. Voiding cystogram 14 months following surgery and showing no reflux up right ureter but persistent mild reflux up left.

of the latter test to detect changes from reflux. In this particular case this might be considered renal atrophy as a result of reflux.⁴

BLADDER NECK REVISION ONLY

This six-year-old boy was first seen in 1957 with a one year history of intermittent episodes of difficulty in voiding and infection. He was found to have 20 ccs. residual urine which was grossly purulent. The intravenous pyelogram (figure 3A) was normal except for mild dilatation of the lower ureter. A transurethral resection was performed at this time and he was lost to followup apparently doing fine. In October 1961, he was seen with a story of the recent onset of enuresis and urinary tract infection. He was found to have a residual of five ounces, and the intravenous pyelogram was again essentially negative. A voiding cystogram at this time showed no reflux as was the case initially (figure 3B). At this time, late in 1961, a surgical reconstruction of the bladder outlet was performed. Sixteen months later he still had no reflux, no residual urine and continued to void well without infection. In this case there was obvious-

ly no reason to revise the ureterovesical junction.

TOO LATE FOR ANYTHING BUT DIVERSION

This seven-year-old boy with a long history of recurrent infections was first seen in September 1962. The intravenous pyelogram showed function only in the right kidney which was hydronephrotic. He was found to have several hundred ccs. of residual urine and the cystogram (figure 4) shows a huge trabeculated bladder and tremendous ureters, pelves and calyces. This child's blood urea nitrogen was normal and he did not feel that he had any great difficulty in voiding. It appeared mandatory that supravescical diversion be instituted. A method of cutaneous ureterostomy described by Thompson, devised to prevent stricture, was performed. The ureters are brought out together in the midline below the umbilicus.^{5, 6} He wears a collecting device very similar to the device which is used for the ileal conduit and no indwelling catheters. So far he is doing very well and the upper tracts have improved.



Figure 3A. IVP showing normal appearing kidneys but mild dilatation of lower left ureter.



Figure 3B. Voiding cystogram showing no reflux.

This child is presented to show the advanced changes that occur when this problem is not dealt with early. These ureters are too large to attempt surgical procedures to prevent reflux. The bladder has developed an advanced degree of thickening and trabeculation and there were small diverticula. The outlet of the bladder could be revised to make it easier for the urine to pass but the reflux would undoubtedly persist and continue the destruction of the kidney. This problem demands diversion above the bladder. At the present time this could be handled by transplanting the ureter into a segment of ileum as an ileal conduit or the ureters could be brought out in the midline as a bilateral cutaneous ureterostomy. A few people would consider doing multiple staged procedures on such a case, starting out with nephrostomies. If the dilatation was relieved, later revision of the entire ureters, ureterovesical junction and bladder outlet would be done in stages. The chance of success seems too small for the amount of surgery and morbidity.

DISCUSSION

Much progress is being made with these



Figure 4. Voiding cystogram showing massive dilatation of ureters, pelvis, calyces and a huge trabeculated bladder.

problems but concepts change regarding the best therapeutic approach. An attempt was made to give some presently accepted views on the subject. In the second category described the need is expressed for revision of the ureterovesical junction and whether or not this procedure should be done is often argued by urologists. This is the only category described that might lead to controversy. When the ureter is moderately dilated during reflux and reflux persists in spite of a reasonable course of conservative therapy, it appears that this should be stopped by revising the ureterovesical junction along with the bladder neck if indicated. There are, however, some urological centers that do not accept this attitude and propose only to treat the bladder outlet.

Many of these patients have obvious neurogenic disturbances because of meningo-myelocoele, vertebral deformities, injuries, etc. Most of these end up with supravescical diversion of the urine and recently the ileal conduit has been the most popular. Many others who do not have these deformities probably have neurogenic disturbance, however, it is extremely difficult to prove and when only potentially existent does not influence therapy. It is extremely important

to control the infection in these children and many people think that if the infection is controlled one can procrastinate for a lengthy period deciding about definite surgical intervention. It is common to follow these children for years before deciding to intervene surgically. Long term suprapubic or urethral catheter drainage is less popular with more confidence in definitive surgery on the bladder neck and ureterovesical junction or supravescical diversion.

SUMMARY

The subject of vesicoureteral reflux in children is presented because of the tremendous interest and importance of this prob-

lem. Methods of testing for reflux are briefly described and illustrative cases are presented. An attempt was made to categorize the treatment of patients with or without reflux. ☐

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301 N.W. 12th, Oklahoma City, Oklahoma

OKLAHOMA RHEUMATISM SOCIETY

October 27, 1963

SHERATON-OKLAHOMA HOTEL — DEL PRADO ROOM

9:30 a.m. — 4:30 p.m.

The Oklahoma Rheumatism Society will hold a meeting in connection with the Oklahoma City Clinical Society on Sunday, October 27, 1963.

Guest speaker for the morning session will be Doctor Glenn Clark from the University of Tennessee who will discuss "Baastrup Abnormality of the Spine."

The afternoon session will include a panel discussion on arthritis and surgery as well as a question and answer period.

Symposium in Pediatric Endocrinology*

DOMAN K. KEELE, M.D., Moderator**

PARTICIPANTS

George Cahill, M.D.

Assistant Professor of Medicine
Harvard Medical School

Senior Associate in Medicine

Peter Bent Brigham Hospital
Director, Baker Clinic Research Laboratory
Boston, Massachusetts

John D. Crawford, M.D.

Assistant Professor of Pediatrics
Harvard Medical School
Physician to the Children's Service
Massachusetts General Hospital
Boston, Massachusetts

Robert Klein, M.D.

Professor of Pediatrics
School of Medicine, Boston University
Boston, Massachusetts

Judson J. Van Wyk, M.D.

Professor of Pediatrics
School of Medicine
Chapel Hill, North Carolina

Priscilla White, M.D.

Joslin Clinic
Boston, Massachusetts

Case 1: Polyostotic Fibrous Dysplasia and Thyroid Nodules

Doctor Keele: This ten-year-old girl was seen at the Children's Memorial Hospital be-

cause of enlargement of the left side of the face, increasing in size over the last four years. Her history was otherwise not remarkable.

There was marked disproportion of the left side of the face and eyes (figure 1). An ophthalmic examination showed vision of 20/20 in each eye. There was some proptosis of the left eye. The pupils were round, equal and reacted to light; there was normal extra-ocular movement and the fundusoscopic examination was normal. The thyroid gland was mildly and diffusely enlarged and one nodule approximately 2.5 cm. in diameter was noted in the upper pole of the left lobe of the thyroid gland and a smaller nodule approximately 0.5 cm. in diameter in the lower pole of the left lobe. There was mild scoliosis of the back. Brown irregular pigmentation was seen over the back and buttocks (figure 2). The pulse was 80 per minute; the blood pressure was 110/60 mm. of mercury. The patient was judged to be euthyroid. There was no breast enlargement, pubic hair, axillary hair or other evidence of feminization.

The thyroidal radioactive iodine uptake was 30 per cent (normal, 15-35 per cent). The protein bound iodine was 7.4 μ g. per cent (normal, four-eight μ g. per cent). X-rays showed basilar thickening of the skull and bony overgrowth of the left side of the face (figure 3). The left femur (figure 4) and the left tibia showed cystic changes and thickening of the bones. These were interpreted as compatible radiologically with the findings of polyostotic fibrous dysplasia. A thyroidal radioactive scanogram was done

*Supported by a grant-in-aid from the Merck, Sharp & Dohme Postgraduate Program, and the Postgraduate Department of the University of Oklahoma Medical Center, September 25, 26, 27, 1962.

**Department of Pediatrics, University of Oklahoma Medical Center.



Figure 1

Case 1: Note enlargement of left side of face.

and it was felt that there were no "hot" nodules in the thyroid gland.

DISCUSSION

Doctor Van Wyk: I don't know whether this girl has two diseases or one. She has a nodular thyroid gland, a condition which is not infrequent in the absence of any other demonstrable type of endocrine disturbance. A nodular thyroid gland could be on the basis of Hashimoto's disease, although in this condition the gland usually has an accentuation of its lobular architecture rather than nodules. She is not thyrotoxic.

As far as therapy is concerned I would start her on desiccated thyroid in an attempt to suppress her thyroid gland hyperplasia and then observe the gland for evidence of further growth. Conservative management is indicated and very little else should be done. These nodules have been here for some time, and they probably won't go away completely.

Now, much more interesting in this girl are these other findings of a peculiar facial configuration, fibrous dysplasia with *café au lait* spots, and some thickening of the

basilar bones of the skull. Her photographs are quite characteristic of the picture usually associated with Albright's syndrome, or polyostotic fibrous dysplasia. Often there is enlargement of the anterior fossa with some frontal bossing, frequently with exophthalmus. Not infrequently, the sclerosis becomes so severe that it interferes with vision. The British have attempted to drill through this very dense bone to make room for the optic nerves, since one of the biggest problems is blindness occurring from hyperostosis of the basilar portion of the skull. Fortunately, this tendency toward progressive hyperostosis tends to be ameliorated with adolescence. Attempts have been made to treat this with estrogens prior to adolescence but the results have been equivocal.

We debated at lunch whether this was polyostotic fibrosis dysplasia or Von Recklinghausen's disease. Fuller Albright wrote a medical classic, "In Defense of a Syndrome" after critics had claimed that these conditions were one and the same disease. Certainly in Von Recklinghausen's disease there are various types of endocrinopathy just as there are in Albright's syndrome. The types of endocrinopathy seen are vari-



Figure 2

Case 1: *Café au lait* spots.

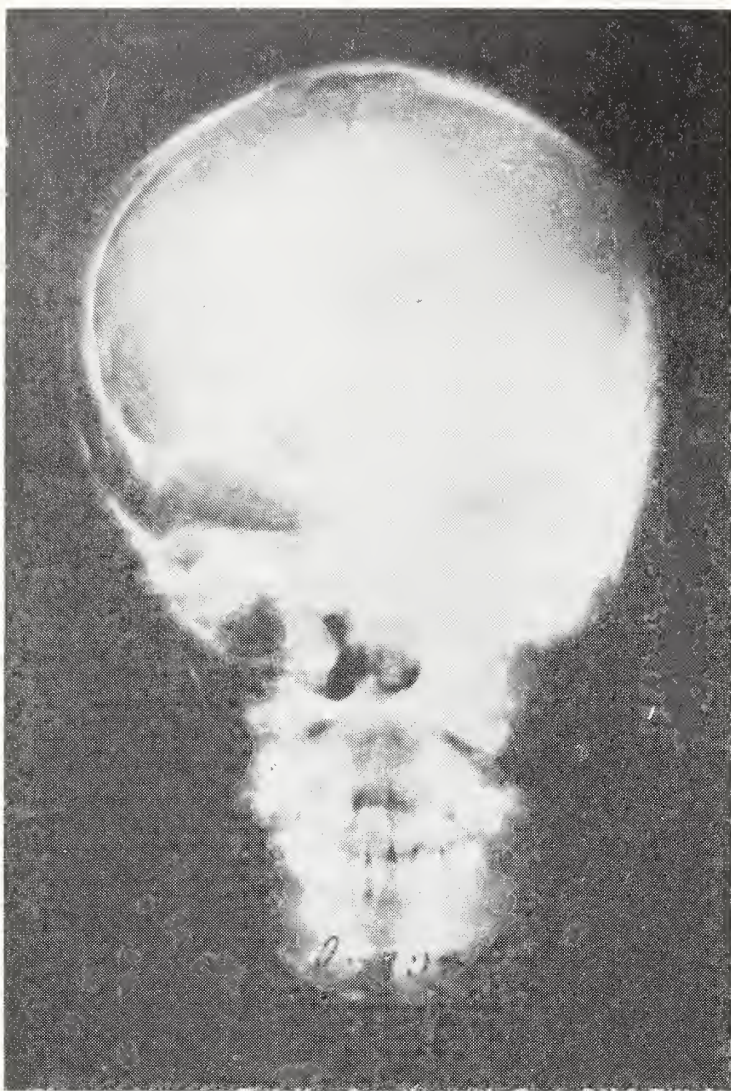


Figure 3

Skull x-rays, Case 1: Note sclerosis of left side of face and skull.

able, but the most common one is idiopathic sexual precocity. With simple sexual precocity all the events of a normal adolescence occur early. In Albright's syndrome this occurs principally in females but only rarely in males. We have in our clinic, however, one boy with severe sexual precocity who also has classical Von Recklinghausen's disease with *café au lait* spots. In addition to sexual precocity, many individuals with Albright's syndrome exhibit exophthalmus and thyroid enlargement, with or without signs of hyperthyroidism. If hyperthyroidism exists, it usually is mild. This may not be classical Grave's disease in the usual sense. The etiology of the thyroid enlargement is unknown, but again it sounds like a type of central stimulation, perhaps due to hyperostosis pressing on some areas at the base of the brain. Lastly, we have in our clinic a girl with polyostotic fibrous dysplasia, gigantism,

a diabetic glucose tolerance curve and breast development dating from age two years. In addition this girl is severely virilized with a large clitoris and a masculine growth of hair. The virilism is of ovarian origin. So we can get a great variety of endocrine disturbances associated with polyostotic fibrous dysplasia. We don't know the precise etiology in any of them but the common denominator seems to be that of central stimulation rather than a defect in the peripheral target glands.

Doctor Keele: Do any of the members of the panel wish to comment?

Doctor Crawford: I agree with Doctor Van Wyk's diagnosis entirely. Thyrotoxicosis, of one form or another, next to sexual precocity, is the most common endocrine manifestation in this syndrome and it occurs in about 25 per cent of the cases in the group we have followed. It is of interest in that nodular goiter is slightly more frequent than



Figure 4

Pelvic x-rays, Case 1: Note polyostotic fibrous dysplasia of left femur.

diffuse hyperplastic thyrotoxicosis. It is, as Doctor Van Wyk mentioned, a very mild disease.

Doctor Klein: I do not want to argue about whether this is two diseases or one. I feel as does Doctor Van Wyk. Doctor Douglas Buchanan lumps all these diseases involving the central nervous system and skin, etc. as phakomatoses. He makes no attempt to break down the classification further, which is probably the smartest thing to do in our present state of ignorance. I do think that the patients I have seen with enlargement of one side of the face, skull, or long bones all have to be classified as Von Recklinghausen's disease since many had typical nodules and all had family histories involving many individuals with typical subcutaneous nodules, etc. I do not think this is of great clinical importance here, but it is the basis of my choice of the term neurofibromatosis. The thyrotoxicosis could result from a lesion, perhaps a hamartoma of the hypothalamus.

Doctor Crawford: At one time we thought we could determine whether polyostotic fibrous dysplasia was associated in cases of childhood sexual precocity simply by taking a lateral film of the skull. If this showed hyperostosis of the basal structures such as you have seen in the present case, then we would consider polyostotic fibrous dysplasia was in some way responsible for the precocity. We have now followed for a number of years, several patients with sexual precocity in whom x-ray studies of the skull had been consistently negative. These patients have taught us that we must look beyond the skull and also recognize that typical lesions appear in what was previously normal bone. One cannot dismiss the possibility of associated polyostotic fibrous dysplasia in a sexually precocious girl at the age of four on the basis of a negative bone survey. The diagnosis may not clarify itself until eight years of age or even later.

Case 2: A Girl with Masculinization.

Doctor Keele: This 11-year-old girl was admitted to the Children's Memorial Hospital on August 13, 1959, with the chief complaint of "hormonal difficulties." There was no history of the mother having taken hormones during pregnancy; the pregnancy and birth

were normal. The clitoris was not enlarged at birth and the mother did not know when she first noticed the clitoral enlargement and pubic hair. The patient was seen at age two years for removal of a foreign body from the vagina; the urologist noted no clitoral enlargement at that time, however, the mother remembers the patient had pubic hair by the time she was in first grade. She was the tallest girl in her class by the time she was in the sixth grade. She had had no menstrual periods. She had had no serious illnesses and had been in excellent health all of her life. Socially, she took an interest in boys and they were attracted to her. The patient's mother was 36 years old, living and well, and gave a history of having pubic hair in the first grade of school; she began normal menstrual periods without any therapy at approximately 14 years of age. The patient had one 13-year-old normal female sibling.

On physical examination she was a tall 11-year-old girl. Her blood pressure was 110/70. She was well developed, well nourished and had a masculine habitus. Her voice was husky, her muscles were large and the veins of her hands and anticubital spaces were large. There was a slight fuzz on the upper lip and acne on the back and shoulders. There was no breast development and there was hair around the areolae of the nipples. The axillary hair was abundant and the pubic hair was prominent, extending up the midline to the umbilicus. There were no palpable masses in the region of the kidneys. The clitoris was enlarged, measuring three-four cm. in length. The introitus was normal, and there was no labioscrotal fusion. The 24-hour urinary 17-ketosteroid determinations are given in table 1. Therapy was given according to table 1.

Three months after beginning therapy the patient began to show signs of feminization and the breasts began to enlarge. Six months after beginning therapy the patient had her first menstrual period. Two months later she had her second menstrual period. She continued to feminize; the breasts became much larger and the vagina took on the appearance of an adult. The vaginal smear became positive for estrogen effect. The acne disappeared. In view of the fact that the clitoris was not noticeable on standing, a clitorectomy was not done.

TABLE 1. LABORATORY AND THERAPEUTIC DATA
(CASE 2)

Date	Therapy		Urinary 17-Ketosteroids per 24 hours
	Drug:	Dosage:	
8/13/59			50.0 mgm.
9/3/59	Cortisone	50 mg./day	20.0 mgm.
12/10/59	Cortisone	50 mg./day	16.0 mgm.
12/17/59	Dexamethasone	1.25 mg./day	10.3 mgm.
1/7/60	Dexamethasone	0.75 mg./day	8.0 mgm.
2/1/60	Dexamethasone	0.5 mg./day	6.8 mgm.
5/15/60	Cortisone	50 mg./day	9.6 mgm.
12/5/60	Cortisone	50 mg./day	10.2 mgm.
10/1/61	Cortisone	50 mg./day	7.9 mgm.
4/4/62	Cortisone	37.5 mg./day	6.6 mgm.

DISCUSSION

Doctor Keele: We wonder if this is an acquired type of the adrenogenital syndrome due to adrenal hyperplasia. There was no evidence of labio-scrotal fusion; neither was the clitoris enlarged at birth or at two years of age when a foreign body was removed from the vagina.

Doctor Klein: I don't think one can answer this question. Certainly there are cases described with every possible variation of genitalia at birth, which are obviously congenital. I think one must say that if she had had an enlarged clitoris or labio-scrotal fusion at birth, you could conclude it was congenital. In the absence of this I do not think you can make very much of this, except to say that possibly it was acquired. Unfortunately, our familial studies so far have not turned up anything clinically helpful. Perhaps some of the others can suggest a way of deciding this point.

Doctor Van Wyk: How about the patient's mother?

Doctor Klein: How about her?

Doctor Van Wyk: It was reported that she had pubic hair at age six. How do you interpret this? Dismiss it? Say it is pathologic and that the mother also has the adrenogenital syndrome in homozygous form but it is of very, very mild degree? She must have married a man who is recessive for this trait since the child is affected. Perhaps the mother is a heterozygous carrier but is expressing her recessive trait in mild form. Or is this a different disease all together? What studies were carried out on the mother?

Doctor Keele: The mother would permit no tests.

Doctor Van Wyk: You need a detective!

Doctor Keele: We would have liked to have studied her urine for steroids.

Doctor Klein: I think that pubic hair at the age of six is abnormal but does not necessarily mean the adrenogenital syndrome. If it does mean the adrenogenital syndrome then this is an entirely new finding which no one has reported. We can only speculate on the relationship. The other question is—is the anamnesis correct? Did the mother say, "Well, I had pubic hair a long time ago but didn't do anything and I am perfectly all right," to explain why treatment was so late in the daughter? In any event, as far as the child is concerned she has all the classic findings that go along with adrenal hyperplasia. Whether it is congenital or not remains moot. She is responding very well to treatment. Is there anything that disturbs you about her?

Doctor Keele: No. How many female patients with congenital adrenal hyperplasia do not have some degree of labioscrotal fusion?

Doctor Cahill: We have followed two sisters who had their onset of virilization at 38 and 50 years respectively. Both have apparent 21-hydroxylase deficiency with excellent suppression of 17 ketosteroids with 0.5 mgm. dexamethasone every six hours. By chemical definition these two have congenital adrenal hyperplasia even though one developed virilization post-menopausally!

Doctor Van Wyk: This is sort of like diabetes mellitus. They are born with the disease but the phenotype doesn't progress, at least so that you can recognize it, until some time later. I think this differentiation between acquired versus congenital is a misuse of nomenclature in modern genetic terms. This is a genetic disease, but in order to get labio-scrotal fusion there must be androgenic stimulation before the 12th fetal week, but in many affected individuals the virilization may become first manifest after the 12th fetal week, after birth, or at 90 years of age like the diabetic. The keynote for this entire discussion was sounded yesterday in Dr. Neil Kirkman's talk. We are just beginning to realize that more things are genetically determined than we ever thought of before. We used to look only at the very

severe, obviously recessive type of disorder which had a very severe phenotype. Now we are beginning to see genetic factors in all kinds of milder disorders.

This patient may not have the adreno-genital syndrome as we are accustomed to seeing it, but I think we have to approach every disorder with an open mind which is alert to new variants. Whatever the proband in a family with adrenal hyperplasia has, the rest of that family will be like that proband but perhaps different from all other families who have been described previously. For example, we have one family in which, contrary to expectations, the boys virilized at an early age, had enlargement of the testes and elevated gonadotrophins in their urine. Spermatogenesis in these cases went counter to the usual explanation. These are genetic variants and may not involve the same gene. There may be a number of gene loci closely related. A slightly different locus for the adrenogenital syndrome in a given family would give a different clinical picture and probably different biochemical findings as well if the proper techniques were used to find them.

Doctor Klein: This is very lovely but it doesn't alter the semantic problem. I think you are confusing it when you equate inherited disease with congenital disease. This is not what is ordinarily meant as congenital disease. Congenital disease usually means that the manifestations are expressed at birth and result from something which happens previous to that. This may or may not be inherited in the sense of being genetically transmitted but may be an accident of gestation. I don't think you can change the ground rules. I am just as enthusiastic over the genetic possibility as you, but I don't think we have a right to switch definitions in midstream.

Doctor Van Wyk: But is it not also incorrect to talk about this case as acquired? You may not wish to call it congenital, but certainly it is not acquired, as if there were some environmental influence or some accident which happened after birth. It is possible that critical examination at birth would have disclosed slight clitoral enlargement.

Doctor Klein: You brought up the example of diabetes mellitus. Many individuals have the proper inheritance for the develop-

ment of diabetes. However, some may never develop the disease while others may develop it only after becoming obese in middle age. They may lose weight and no longer have the disease by any of our criteria. This is a genetically determined disease that requires the acquisition of fat before it appears. You needn't say this was an acquired disease if you object, but you may not say it was a congenital disease since the disease did not exist at birth. In this case the ability to develop diabetes under the right circumstances is inherited and therefore congenital, but you cannot say that having the inheritance is the same as having the disease.

Doctor Keele: Thank you for your discussion.

Case 3. Glycosuria.

Doctor Keele: The next case, a six-year-old white female, presented at the Children's Memorial Hospital with a chief complaint of periumbilical pain of four months duration. She was in good health until May 1960 when she had a tonsillectomy because of frequent sore throats and infected tonsils. On the day following the operation the patient experienced severe peri-umbilical pain which lasted approximately 36 hours and increased in intensity causing the patient to cry. She became nauseated, vomited and was unable to keep food down. She recovered from this and had done well until three weeks prior to admission when she complained of severe stomach cramps. Her temperature rose to 104° and she began to have headaches. Urine at that time revealed a 4+ glycosuria and a blood sugar of 104 mg. per cent. The fever subsided and she felt well and was anorexic for approximately one week. Since that time she had an occasional abdominal pain and some decrease in appetite. In August 1960 she had a third episode of abdominal pain at which time her blood sugar was 120 mg. per cent and glycosuria of 2-3+. This lasted one week. The patient continued to have occasional glycosuria which ranged from 3 to 4+ without acetonuria. A few days prior to admission she had mumps, at which time she also had abdominal pain and glycosuria. There was no family history of diabetes mellitus.

Physical examination was normal; growth and development had been normal.

She was admitted to the hospital. The fast-

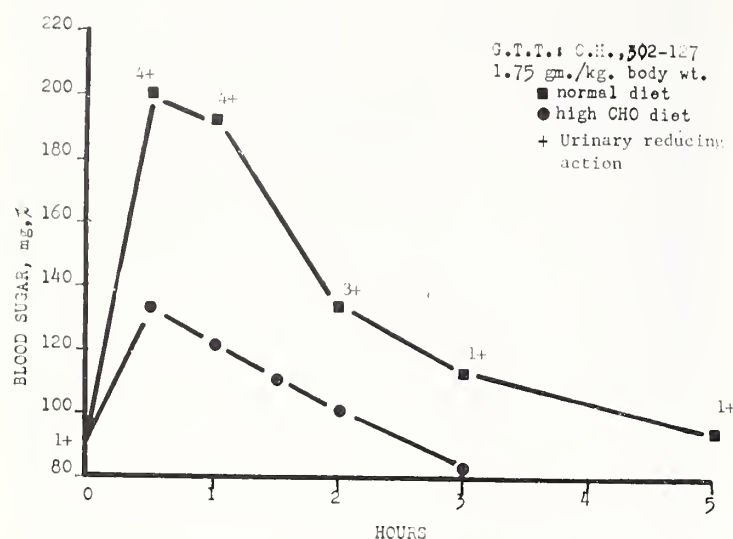


Figure 5
Glucose tolerance tests on Case 3.

ing blood sugar was 104 mg. per cent; a simultaneous urinalysis showed 2+ glycosuria. The protein bound iodine was 5.3 μ g. per cent, the serum cholesterol 240 mg. per cent. The specific gravity of urine was 1.010, pH 5; there were no formed elements and no acetone. Repeated urinary examinations for glycosuria varied between 0 and 4+. Serum amylase was 114. Electrolytes showed sodium 141, potassium 4.4, chloride 103, and CO₂ 31.6 mEq/l. Repeated fasting blood sugars were 65, 82, 75 and 84 mg. per cent. After fasting overnight a glucose tolerance test was done using 1.75 gm. of glucose per kilogram of body weight (figure 5). The fasting blood sugar was 90 mg. per cent; in one-half hour the blood sugar was 200 mg. per cent; at one hour 186 mg. per cent; at two hours 134 mg. per cent; at three hours 112 mg. per cent; and at five hours 94 mg. per cent. This was interpreted as showing a decreased tolerance. At the time of the glucose tolerance test the urine glucoses were: fasting 1+; one-half hour 4+; two hours 3+; four hours 1+; five hours 1+. The patient was placed on a high carbohydrate diet for three days and a fasting oral glucose tolerance test repeated using 1.75 gm. of glucose per kilogram of body weight (figure 5). Fasting blood sugar was 90 mg. per cent; at one-half hour the blood sugar was 132 mg. per cent; at one hour 102 mg. per cent; at one and one-half hours 110 mg. per cent; two hours 100 mg. per cent; and at three hours 70 mg. per cent. This was interpreted as showing a normal tolerance.

The mother was taught to test the urine for glucose and acetone. She has continued to have 1+ to 2+ glucosuria since discharge from the hospital but has never had any acetonuria. Repeated fasting blood sugars done in the clinic have ranged from 77 to 90 mg. per cent. On all occasions from one to 2+ glucosuria was noticed simultaneously when the blood was drawn. The patient has received no therapy and has done well.

DISCUSSION

Doctor White: Again this is a controversial area. What constitutes the diagnosis of chemical diabetes and what constitutes the diagnosis of renal glycosuria? I am sure that Doctor Jerome Conn would call this patient a renal glycosuric but the Joslin Clinic would not. We have a very rigid classification for renal glycosuria. The patient not only must always have normal blood sugar levels but also the urine should never be free from sugar. Patients who show transitory glycosuria but still have normal blood sugars are called unclassified glycosurics. The experience of Doctor Conn and our own clinic are different. He reports that many renal glycosurics eventually become diabetics. With our rigid classification we maintain that it is almost the exception for renal glycosurics to develop diabetes. The next point is, what are the diagnostic levels for blood sugar which constitute the diagnosis of diabetes? Here again we have a very rigid classification. If the fasting blood sugar is 110 mg., post-prandial venous blood true glucose 150 mg., post-prandial capillary blood sugar 180 mg., then the diagnosis of diabetes is made. This patient would be classified as a chemical diabetic in the Joslin Clinic, whether this determination was true glucose or total reducing substance. Helpful in establishing the diagnosis might be the investigation of the other members of the family because renal glycosuria appears to be transmitted through dominant genes whereas diabetes mellitus is transmitted through recessive genes. This patient should be watched very carefully and re-evaluated as often as every three months. The lowering of the glucose tolerance test after the 300 mg. carbohydrate diet may be explained in part by the fact that the patient had received glucose not too long before the second test. Subsequent doses

of glucose tend to lower the blood sugar. I think this patient should be kept under suspicion.

Doctor Keele: Thank you, Doctor White. There was no family history of diabetes in this patient. Does anyone wish to comment on this case?

Doctor Crawford: What was the abdominal pain all about?

Doctor Keele: We don't know.

Case 4: Neonatal Thyrotoxicosis.

Doctor Keele: In January 1959, the mother of the next patient complained of nervousness and was found to have exophthalmus. The basal metabolism rate was +45 and +65 on different occasions, and the protein bound iodine was 20.8 μ g. per cent. She was started on Propylthiouracil® 50 mg. four times a day and Lugol's solution. Three weeks later her basal metabolic rate was —8 and she was prepared for surgery but the family postponed the operation. In June 1959 she was admitted to University of Oklahoma Hospital at which time she had a radioactive iodine I¹³¹ uptake of 80 per cent (normal 15 to 35 per cent) with a protein bound iodine of 13.6 μ g. per cent (normal four to eight μ g. per cent). She was discharged on July 2, 1959, on Tapizol®, 10 mg. every four hours and phenobarbital, 60 mg. four times daily. On August 27, 1959, she was admitted on the surgical service and had a subtotal thyroidectomy. The specimen showed a nodular toxic goiter with one small particle of parathyroid gland. On September 2nd she began to have generalized numbness and tingling with a drawing sensation in her hands. The serum calcium at that time was 7.8 mg. per cent and the phosphorous 3.3 mg. per cent. On September 9 she was started on calcium lactate, one gm. four times daily, and Calciferol® 50,000 units per day and a low milk product diet with Gelusil®. Because of continued hypocalcemia it was necessary to increase the Calciferol® to 100,000 units. On September 28 she was noted to be obese and had bilateral exophthalmus. The protein bound iodine was one μ g. per cent. The diagnosis was hypothyroidism and hypoparathyroidism. On January 12, 1960, her serum calcium was 6.9 mg. per cent and the phosphorus 8.9 mg. per cent. She continued to take the same dosage and in August 1960 her serum calcium was 9.7 mg. per cent, and the



Figure 6

Neonatal thyrotoxicosis, Case 4: Before treatment

phosphorus 5.2 mg. per cent. She remained obese. She was admitted again in October 1960 because of Bell's palsy. At that time her serum calcium was 10.9 mg. per cent and the phosphorus 4.68 mg. per cent. In May, 1961 she had a miscarriage. Her last menstrual period was September 5, 1961; she stopped taking calcium and vitamin D in January 1962. She had no return of muscle cramps or parasthesia during pregnancy. She was delivered on July 2, 1962; she was obese and exophthalmic at delivery. The delivery was apparently without complications.

Her male infant was admitted to Children's Memorial Hospital July 5, 1962. On examination the infant had a pulse of 160, temperature 100.2° rectally, and a respiratory rate of 100. The weight was four pounds 13 ounces and the blood pressure 90 mm. of mercury by the flush method. General appearance was that of an irritable, malnourished white male who was 51 cm. long (figure 6). There was bilateral exophthalmus (figure 6) and hyperemia of the conjunctivae. The thyroid gland was not palpable. There was a tachycardia but no murmur. Neurological examination revealed a good suck reflex, marked irritability and hyperactivity of the deep tendon reflexes. The

hands and toes were flushed. The skin was warm and moist. There was mild cyanosis.

Laboratory Data: The bone age was $21\frac{1}{2}$ standard deviations above the mean. The protein bound iodine on July 6, 1962, was 22.4 μ g. per cent (normal 6 to 12 μ g. per cent). The hemoglobin was 25 grams per cent, the white blood cell count was 8,450 with 38 polys, 42 lymphs, 20 monos, and 6 nucleated red blood cells. The serum cholesterol was 195 mg. per cent. The radioactive iodine I^{131} uptake was 72 per cent in six hours; the 24-hour uptake was 66 per cent (normal 15 to 50 per cent).

Hospital Course: The patient averaged 305 ml./kilogram of body weight of fluid intake per day and 195 calories per kilogram per day. The weight gain was very rapid. He gained from 2.2 kilos to 5.2 kilos during six weeks of hospitalization. The thyroid gland became palpable during the first week. For the first few weeks of hospitalization the patient had a respiratory rate that varied between 70-90 per minute. Pulse rate ranged from 160-190 per minute. For the week prior to discharge the respiratory rate ranged between 40-60 per minute and the pulse rate ranged between 120-160 per minute. The body temperature remained essentially normal throughout hospitalization. On the 11th hospital day the patient developed a draining right ear from which *Pseudomonas* was cultured. This was accompanied by a loss of from 3,000 to 2,600 gms. of body weight but the weight was regained by the 15th hospital day. The treatment for the ear was tetracycline hydrochloride 15 mg. orally every six hours. The patient was given Lugol's solution one minimum every four hours orally for the first 20 days of hospitalization at which point the Lugol's solution was increased one minimum every three hours which was continued for a total course of six and one-half weeks. Following discontinuation of therapy the patient continued to do well and gain weight and was discharged. He was seen one week after discharge having shown no weight gain; he had normal activity but was still somewhat exophthalmic (figure 7).



Figure 7
Neonatal thyrotoxicosis, Case 4: After treatment

DISCUSSION

Doctor Crawford: This is one of those very unusual and interesting cases of neonatal thyrotoxicosis. So far as I am aware, this disorder has been limited to the offspring of mothers with active thyrotoxicosis or Graves' disease relieved by surgery or radioiodine prior to pregnancy. When a mother has been thyrotoxic during pregnancy one might argue that sufficient maternal thyroxine crossed the placental barrier to make the infant thyrotoxic. But the situation is more complicated than this; thyroid hormone fails of ready passage across the placental barrier. Furthermore, neonatal thyrotoxicosis may occur as in the present case when the mother has been myxedematous during pregnancy. It would appear, therefore, that a thyrotrophic factor, most likely the long acting stimulating substance of Adams, is the maternal influence which crosses the placenta and leads to thyroid hormone hypersecretion in the fetus and neonate. In a person such as the mother of the present infant, the trophic factor can have no metabolic influence because the target gland has been surgically removed. Nevertheless, high levels of the circulating

agent may have been responsible both for the exophthalmus of the mother as well as that of the infant.

Fetal thyrotoxicosis would appear to be the explanation for this neonate's emaciated appearance. His length of 51 cm. was just above average for a term infant. His weight of four pounds 13 ounces was below the third percentile and x-rays showed advanced skeletal maturation with ossification centers not normally present until three to six months of age.

The fact that the gland appeared to be of normal size at birth is not unusual. This has been reported in the literature and we, too, have seen it. The thyroid gland of the neonate is difficult to delineate and goiters in this circumstance are much smaller than that of the neonate whose mother has been treated with one of the thyroid blocking agents such as Propylthiouracil.[®]

The treatment generally recommended and used in this infant is iodide in the form of Lugol's solution. Digitalis is employed if cardiac failure is a problem. I am not sure that any of us have done careful studies to evaluate the effectiveness of treatment. If death due to acute cardiac failure does not occur, the course is one of rapid improvement as it was in this child. In this connection, I should like to ask Doctor Van Wyk if he feels we should continue to use Lugol's solution or are there better means of treatment at hand.

The infant under discussion provides a nice example of the influence of a hormone other than vasopressin on water metabolism. Water turnover was approximately two and one-half times normal. Two factors must have been important. The first was the large extrarenal loss consequent to the hypermetabolic state. The second, and probably quantitatively much more important, was the elevated renal demand for water to excrete the metabolites deriving from the extraordinarily high food intake.

Finally, it is of note that this hypoparathyroid mother was able to discontinue, without incident, her very large doses of vitamin D and calcium as early as the second month of pregnancy. Doctor Keele, can you tell us if she had to return to vitamin D and calcium after her baby was delivered?

Doctor Keele: Yes. She began to have

tingling in her fingers shortly after delivery and her physician started her on the same medication.

Doctor Crawford: This is quite characteristic of the fetus' service to the maternal organism with hypoparathyroidism. Were any studies on the calcium and phosphorus metabolism in this particular infant done?

Doctor Keele: Approximately one week afterward and at that time the calcium and phosphorus levels were normal. The reason we waited a week was to get serum from the infant to test for the long active thyroid stimulator (LATS) of Adams which we sent to Dr. David Solomon in California to run for us.*

Doctor Crawford: Dr. Van Wyk, would you like to speculate on what the proper treatment of these infants should be?

Doctor Van Wyk: I might have treated this baby with Lugol's but generally I think that Lugol's is a very poisonous and hazardous substance to give babies of this age. Dr. Talbot pointed out in his book that iodine preparations, when administered to the mother during pregnancy, are a frequent cause of neonatal goiters. In any event, we are quite impressed that mothers who get Lugol's solution are the ones who have babies with big goiters. Also, if you have a newborn with a large goiter, whether toxic or not, it doesn't go away with Lugol's solution, it just gets hard.

Babies with this disease have two problems, the first is hypermetabolism which is probably appropriately treated with Lugol's, but the other is the danger of asphyxia. We had one similar baby who was hypermetabolic, not quite as hypermetabolic as yours, but it was about to choke to death. This presents a dilemma. You can do a certain amount by positioning the neck but you can't do a tracheotomy since the tube can't get below the thyroid gland. In fact, if a tracheotomy is done at this stage it usually is fatal. If you are going to do anything surgically, you have to split the isthmus, and to take a hypermetabolic baby to surgery is quite a problem. So you are in a serious therapeutic dilemma at this point. In our infant the mother had received large amounts of anti-thyroid drugs and we thought the etiology was some type of thyroid stimulating hor-

*Doctor Solomon reports that LATS was positive for both infant and mother.

mone, either normal or long acting. This child was treated, perhaps illogically, with Cytomel®. The gland became smaller and we actually got away without splitting the isthmus. When we eased up on the dosage, the gland grew larger. We titrated the baby along for three months and after that everything was alright. This baby likewise had a severe exophthalmus which eventually disfigured the head.

There is one other point in treating hypermetabolism. It has long been said that a hyperthyroid individual is hypersensitive to epinephrine and norepinephrine. It may be that cardiovascular manifestations in acute thyrotoxicosis are similar to those induced by epinephrine or norepinephrine. This may explain the beneficial effects of Serpasil® in thyrotoxicosis. Serpasil® reduces the body stores of catecholamines. We have been impressed with the use of Serpasil® in bringing these acute symptoms of hypermetabolism under control. Large doses of Serpasil®, such as you might use for hypertension brings the pulse rate, etc., under control more rapidly than other measures we have used. So in this particular infant, I would have treated the hypermetabolism in a way which we think of as blocking the peripheral effects of thyroid hormone and not direct the immediate treatment at the production of thyroid hormone. We might have given this child iodine if there was no danger of asphyxiation. We think that iodine is contraindicated if there is any danger of asphyxiation. On occasion you may be forced to split the thyroid isthmus.

Case 5: Hypoglycemia

Doctor Keele: This is an 18-year-old male who came to the University Hospitals with a complaint of weakness and fainting after a short fast or with exercise. He had been healthy until May 1960 when he was trimming a tree. He collapsed but regained consciousness and lowered himself to the ground from the tree. He collapsed again and was treated with intravenous fluids and sodium chloride. One week later he could not be awakened fully by his parents in the morning until he was given orange juice. The physician made a diagnosis of hypoglycemia but was unable to demonstrate this by lab-

oratory tests. Several syncopal attacks followed this; they were preceded by leg cramps on exercise and were accompanied by sweating. He was seen at another hospital in June, 1960 and a work-up there included a six-hour glucose tolerance test. A diagnosis of functional hypoglycemia was made. In July, 1960 he had several bouts of cramping and weakness in the lower extremities. While playing basketball in September he noted cramps unless he ate sweets just prior to playing. On one occasion in September he collapsed after basketball practice and required intravenous glucose for recovery. His blood glucose level at that time was 30 mg. per cent. On September 15, 1960, he was seen by his physician who referred him to the University Hospitals. In November 1960, he had a generalized convulsion and a blood sugar of 27 mg. per cent was reported.

He was admitted November 28, 1960. The physical examination was normal. On the morning of November 29 he was found to be unresponsive. A fasting blood sugar was drawn and 40 ml. of 50 per cent glucose in distilled water was given. The patient responded immediately and the blood sugar later was reported 36 mg. per cent. On November 30 he had two fasting blood sugars, one being 30 and the other 35 mg. per cent. Several tolerance tests were done (table II). On December 5, 1960, the patient had an exploratory laparotomy. A 2.5 cm. tumor of the pancreas was found approximately at the junction between the body and the tail. The tumor was resected and removed. Two weeks following surgery the patient developed chills, fever and abdominal tenderness. He was explored and found to have a lesser sac abcess. Drains were left in the abcess and drainage was continued until January 15th, when the drains were removed. He remained well and was discharged. Microscopic examination of the tumor showed an Islet cell adenoma of the pancreas, beta cell type. There was no further history or evidence of hypoglycemia. He was asymptomatic some nine months after surgery.

DISCUSSION

Doctor Cahill: This history is classical for an islet cell tumor. The capacity of exercise to increase the effectiveness of a given

TABLE II: TOLERANCE STUDIES ON CASE 5

IV GLUCOSE TOLERANCE TEST		IV SODIUM TOLBUTAMIDE TOLERANCE TEST		ORAL GLUCOSE TOLERANCE TEST	
.2 gm/kg actual wt. given		250 mgm given IV in		using 84 gm. glucose	
IV in 2 minutes		50 seconds			
Fasting					
5 minutes	115 mg.%	5 minutes	46 mg.%	30 minutes	56 mgm.%
6 "	107 "	10 "	41 "	60 "	46 "
10 "	122 "	15 "	41 "	90 "	54 "
20 "	100 "	20 "	41 "	120 "	63 "
30 "	82 "	30 "	39 "		
40 "	72 "	40 "	36 "		
50 "	60 "	45 "	41 "		
60 "	56 "				
70 "	50 "				

amount of insulin is well known in diabetes and is certainly borne out in this case, since he so frequently had hypoglycemic episodes while engaged in athletics. The other time the tumor became symptomatic was after prolonged fasting. These two situations are what make the case history so classical for hyperinsulinism, namely symptoms either after prolonged food deprivation or after physical exercise.

How does one differentiate between functional hypoglycemia and an islet cell tumor? I might first ask what is functional hypoglycemia? I really wonder whether I have ever seen a patient with it. The patient who eats a meal high in carbohydrate at about 1:30 p.m. and at 5:30 p.m. feels hungry, tired and perhaps a little dizzy, is usually an overweight female between 35 and 45 years of age. Frequently, this patient will put on much weight and if followed for several years, eventually becomes an overt diabetic. Thus, this "functional" hypoglycemia is a manifestation of the prediabetic state. Unfortunately, we don't have time to speculate on the physiologic mechanisms responsible for this type of mild hypoglycemia.

What other diseases could present as did this boy? With his basketball and other athletic activities, Addison's disease or hypopituitarism can be excluded. Another possibility is a retroperitoneal sarcoma producing an insulin-like material, or perhaps Hodgkin's disease, which also has been associated with this type of hypoglycemia, especially after prolonged fasting or exercise. But again, his good health between episodes is against one of these tumors.

He received sodium tolbutamide, 250 mgm.

intravenously, but his blood glucose was already low, so the test was not of much help. Thanks to Doctor Fajans and Doctor Conn at Ann Arbor, administration of one gram of sodium tolbutamide intravenously to a patient with a blood glucose of about 75 to 80 mgm. per cent produces a prolonged and persistent hypoglycemia if the patient has an islet cell tumor. This test has been positive in all but one of approximately thirty tumors. In the normal, blood glucose falls to hypoglycemic levels within 45 minutes, and returns to normal by 1½ hours. Patients should be watched closely during this test for possible convulsions.

Finally, I want to discuss the glucose tolerance test. This is of very little help. The blood glucose in this patient fell to one-half the immediate post-infusion level in 50 minutes. Thus, dividing this into 69.4 results in a disappearance rate of about 1.4 per cent per minute, which is normal. Patients with islet cell tumor may even have a slightly diabetic tolerance. The best diagnostic test continues to be a fasting blood glucose. If this is normal, the patient should continue fasting for another 24 hours and another glucose obtained. If this is still not low enough to be diagnostic (30-40 mgm. per cent or less) the patient can go up and down the stairs several times and another glucose obtained (again this should be closely supervised). If the blood glucose remains normal, the tolbutamide test can be done. If the patient is elderly or otherwise debilitated, the tolbutamide test is done in place of the exercise.

Doctor Keele: Doctor Cahill, is the amino acid, leucine, of any use in diagnosis of these tumors?

Doctor Cahill: Doctor Keele has brought up the question of leucine sensitivity in patients with islet cell tumor. This is a confusing issue. About one-half of the patients with islet cell tumor demonstrate sensitivity to leucine, as evidenced by hypoglycemia. The whole problem is fascinating, since normals given any one of the sulfonylureas also

demonstrate excessive sensitivity to leucine. I think giving this patient leucine would have been of academic interest.

Doctor Keele: Any comments?

Doctor Klein: How often are muscle cramps a symptom of hypoglycemia?

Doctor Cahill: Frequently, I think.

Doctor Keele: Thank you, gentlemen and Doctor White, for your interesting comments on these cases.

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Radium Substitutes in the Interstitial Implantation of Tumors-- With Particular Reference to Iridium-192*

NORMAN SIMON, M.D.

Radioactive iridium is safer and more accurate than radium in the implantation of cancers.

IN RECENT YEARS there appears to be a waning interest in the implantation of tumors with radium. Two reasons for this decrease in interest are, first, the greater number of trained surgeons who can skillfully remove resectable cancer, and, second, the limitations of radium and the reluctance on the part of the radiotherapist to expose himself to radiation during the implantation of radium.

Those tumors which can be treated practically equally as well by excision or implantation of radium are much more likely to be excised surgically, and only where radium causes less morbidity is the implantation method popularly used. This preference for radium over surgery is best seen in the treatment of cancer of the tongue and of metastatic neck nodes, sites which account for much of radium implantation in com-

mon usage. But even in these sites cancers are often operated on in preference to radium. Thus the present practice serves to increase the use of surgery in comparison with radium by increasing the number of trainees in surgical treatment of these lesions which are often suitably treated with radium.

The reluctance on the part of the radiotherapist to extend the use of radium implants is largely due to the newer appreciation of the hazard to lower dose exposure to radium. Often the radiotherapist will hesitate to advise palliative implantation of a tumor with radium, since he would prefer to restrict his exposure to radium to procedures in patients who are potentially curable. Meanwhile, this restrictive attitude toward radium implants decreases the number of trainees who have confidence in the use of this effective method of treating cancer. In some institutions, radiotherapy trainees find great difficulty in acquiring sufficient practical experience in implanting tumors to give them confidence, and sometimes their training is only with mock-up implantations for practice or by observation of a few curable tumors implanted by a preceptor.

Radium is such an effective agent for the treatment of tumors by implantation that it is little wonder that it continues to be the most frequently used radioactive material

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for this purpose. It is permanent, always available, never needs calibration corrections, and, although apparently expensive, it is really quite inexpensive on a per treatment or use basis. However, it has some disadvantages. The preparation and use of radium devices for implant results in unavoidable radiation exposure to radiotherapeutic personnel. This exposure is acquired during the making up of applicators and the preparation of radium needles requiring the attachment of suture material and identifying buttons. Then, during the implantation or insertion of these radium applicators into the actual tumor more exposure is acquired by personnel. The experienced radium handler can sometimes put a radium system into the uterine cavity and vaginal fornices with a whole body exposure to the operator and his assistant of no more than 20 to 30 mr., but, even with experience, the implantation of radium needles into a carcinoma of the tongue usually results in an exposure to the operating personnel of 50 to 75 mr. The specific activity of radium is so relatively low that its needles and applicators are usually too large to allow an after-loading technique of implantation. Special applicators have been devised to insert a thin source of radium into the uterine cavity and some special radium needles have been designed to be inserted after an operative procedure is completed, but usually radium is inserted "live," and the operator receives his dose while implanting the radium into a tumor. Unfortunately, the gamma ray from radium is so energetic that it is difficult to filter or shield the radium effectively in an operative procedure. The half value

layer of radium gamma rays in lead is 12 mm., and equipment is therefore bulky when shielding is effective. The rigidity and fragility of radium needles make them quite inflexible, and it is at times difficult to conform to the shape of a tumor during interstitial implantation, and an ideal distribution of radium is sacrificed because of the danger of damaging a needle. The danger of damage to a radium needle or capsule is always to be reckoned with, for leakage from a broken capsule can cause contamination with irradiating material of long half life, and the escape of radon from a radium source creates considerable anxiety, if not great actual hazard.

Because of the disadvantages of radium, a number of newer radioactive isotopes have been promoted and investigated as radium substitutes. None of these newer isotopes has yet generally replaced radium as the most practical and useful agent for the interstitial implantation of tumors. The characteristics of some of the isotopes used as radium substitutes are shown in Table I.

Table I.
CHARACTERISTICS OF RADIUM SUBSTITUTES

	T 1/2	Energy of Gamma Ray	K factor r/hr/mc at 1 cm.	HVL (in Pb)
Co 60	5.2 y	1.2 Mev	13.4	1.2 cm
Au 198	2.7 d	.4	2.4	.3
Ir 192	74 d	.3-.66	5.5	.3
Ta 182	115 d	.05-1.24	6.1	1.0
Ra 226	1600 y	.05-2.4	8.2	1.2
Radon	3.8 d	—	8.2	1.2
I 131	8.0 d	.28-.72	2.3	.3
Cs 137	30 y	.6	3.3	.5

Cobalt 60 has its most important use in medicine in teletherapy apparatus. As a radium substitute in the interstitial implantation of tumors it has also achieved some use by those radiotherapists who have fashioned devices for specific uses in the treatment of skin cancers with discs of cobalt 60 and even as spheres for insertion into body cavities. Cobalt 60 needles have also been substituted for radium quite effectively. The advantage over radium is so little that the necessity of bookkeeping corrections for the decay of cobalt is a chore which keeps it from taking over from the permanent radium needle set-up.

Gold 198 has also found its use as a substitute for radon seeds. The tiny grains of gold are ingeniously injected into a tumor by means of a protected gun. These gold

Norman Simon, M.D., a 1939 graduate of Harvard Medical School, limits his practice to his specialty, radiology. He is certified by the American Board of Radiology.

Doctor Simon is chairman of the New York State Medical Society Committee on Health Aspects of Ionizing Radiation, consultant for the Oak Ridge Institute of Nuclear Studies, medical consultant for the New York Operations Office, A.E.C. and Associate Radiotherapist at Mt. Sinai Hospital in New York City.

grains are useful in the implantation of carcinomas of the bladder, and in other tumors ordinarily implanted with radon seeds. Even in these limited applications gold grains have not acquired a general use as radium substitutes. Similarly, tantalum 182 is implanted into tumors in hairpin-like shapes which are adaptable to tumors of the bladder and mouth. These tantalum devices are not suitable for the treatment of large tumors. It would seem attractive to use a fission product like iodine 131 or cesium 137, for these isotopes should be abundant and cheap, but they are limited in their specific activity. They have only been used as radium substitutes in research projects.

The radioactive isotope which appears to have considerable advantage over radium and other radioactive isotopes is iridium 192, commonly supplied in nylon tubing and implantable with an after-loading technique into many lesions. Iridium 192 has a half-life of 74 days which is appropriately long so that its decay need not be considered as a factor in dosage determinations during an implant of several days to a week. Its gamma rays are in a spectrum from .3 to .66 mev, and the half-value layer of its emitted gamma rays is 3 mm of lead. The intensity of its radiation is 5.5r per mc at 1 cm., compared with an intensity of 13.4 for cobalt 60 and 8.2 for radium. Although its effective gamma radiation is relatively easily protected in comparison with radium, its energy is high enough to be practical and useful in implants. The favorable characteristics of iridium 192 in nylon tubing are as follows:

1. Safety for operator.

The ability to protect by shields which are less bulky than those required for radium makes it relatively more safe to handle this isotope. The most important factor of safety is the technique of implanting the nylon tubing as an inert leader. After the implant is completed with inert leader the active material is rapidly pulled into final exposed position. Also, the isotope and tubing are expendable, and there is no exposure to radiotherapy personnel in preparation for the implantation.

2. Flexible and adaptable.

The nylon tubing has the thickness of heavy chromic catgut, and it can be sewed into tumors with usual surgical methods. In this way the tumor can be implanted with proper appreciation for the way a tumor grows, rather than being restricted to implanting geometric patterns determined by the shape of rigid radium devices.

3. Greater accuracy.

The nylon tubing can be inserted interstitially with much more regularity and precision than is ordinarily seen in radium implants. Although the iridium is implanted as sources of equal strength, these can be removed at different times to conform to a predetermined dose distribution plan.

4. Ease of surgical procedure.

Since the iridium is provided in this suture-like nylon tubing, it can be inserted into tumors in conventional surgical fashion rather than with use of special equipment and instrumentation. It is even useful for large tumors which can be implanted with local anesthesia, if necessary.

5. Expense.

In comparison with radium, iridium is expensive because of its expendability, its one time use. When a radiotherapy department owns radium, it can be used over and over again. Although it would appear to be expensive as far as its original cost is concerned, it never has to be replaced. Iridium, however, is used once, and then returned to the commercial supplier for disposition. It is expensive insofar as dollars are concerned, but the low dose of radiation received by the operator balances the added cost.

The most attractive feature of iridium 192 in nylon tubing for implantation in tumors is the low dose of radiation received by the operator. It is not unusual for an implant of a head and neck lesion, including implantation of practically the entire neck on one side, to be done with dose to the operator of 10 to 15 mr. Because of the relative safety, or, at least, the lessened dose to personnel, indications for interstitial implantation with radioactive materials may be expanded.

Table II
INDICATIONS FOR IRIIDIUM IMPLANTS

1. Tumor small and accessible.
2. Technical inoperability, e.g., age, cardiac status.
3. Residual after resection.
4. Palliation.

Just as small and accessible tumors can be implanted with radium or radon, so can they be implanted simply with iridium-192 in nylon tubing. In our recent experience, we have found that a frequent indication for iridium implants is the hesitancy of the surgeon to operate because of the patient's general condition and technical inoperability. For example, we have implanted several metastatic lymph nodes of the neck which would ordinarily be treated by radical neck dissection, because the patients were too aged to undergo the radical operation with predictable safety. Similarly, the patient who would ordinarily have a radical neck dissection under general anesthesia can be implanted with iridium under local anesthesia with very little morbidity. It is striking to note how comfortable patients are with the flexible nylon tubing containing iridium in implants in comparison with the discomfort most patients have with radium needles in their lesions.

Implanting residual tumor during the course of radical resection of an incompletely removed cancer has always been an attractive goal of cancer surgeons and radiotherapists. Such a form of therapy was most dramatically pointed out in the historic first pneumonectomy for bronchogenic carcinoma done by Dr. Graham in 1933.¹ Upon completion of this operation, he implanted radon seeds into the pulmonary stump, thus vividly demonstrating the feasibility of this procedure, for the patient still survives 30 years later. In surgery of the head and neck, the surgeon may remove radically large amounts of tumor and tissue only to find there is a single suspect site where he has doubt that all tumor has been excised. With the afterloading technique of iridium implantation in nylon tubing, the placing of radioactive material at the suspect site is a practical procedure, and it is now under clinical investigation at our institution.

The radiotherapist who hesitates to use an implantation technique in a palliative

procedure because of the exposure of operating personnel may now use such implants with iridium because dose to personnel is so low. This opens up many cases of metastatic tumors of questionable curability to the possibility of efficacious local implant therapy without great exposure to the surgeon and his team.

The technique of implanting iridium-192 in nylon tubing has been developed principally by Henschke.²

TECHNIQUE

Radioactive iridium for removable interstitial implantation technique of therapy is supplied as seeds in nylon tubing. In the active end of the nylon tubing or ribbon are located 12 iridium-192 cylindrical seeds spaced 1 cm. apart. Each seed is 0.5 mm. in diameter and 3 mm. in length. The remainder of the nylon tubing is empty, containing no seeds. The active end lies in a lead container, while the unloaded ends of nylon tubing are wound around the container ready for use. Implantation needles 15 cms. long are supplied with clips for attaching the nylon tubing to the skin or mucosal surface. The long implantation needles are placed through the tumor and in its periphery, essentially as radium needles are distributed, but both ends of each hollow needle project from the tumor. These needles define the area implanted. Since they are inactive insofar as radiation is concerned, they can be placed with great care and with considerably more precision than is usual with radium. The hollow needle is 18 gauge, somewhat smaller than usual radium needles. Blood vessels present no particular hazard. When the needles are in satisfactory position, the unloaded ends of the nylon tubes are threaded through the needles, each needle being removed and leaving within the tumor a distribution of unloaded ends of nylon tubing; the implant is still free of radiation, the active ends of the nylon tubing still lying within the lead container. The implant is completed by pulling through the tumor the active ends of the nylon tubing containing the iridium, and the required length is left firmly in the tumor by crimping each end with a metallic button. This method of implanting through hollow needles is the most useful technique for

accessible tumors, but at times other techniques must be employed because of the nature of the lesion. As an example, it is possible to suture the radioactive material into tumors by arming the unloaded end on a conventional type of curved surgical needle. Special methods of implantation will become apparent to the radiotherapist as he approaches an individual tumor.

Examples of lesions treated with nylon tubing containing iridium-192 seeds are numerous, because the technique is adaptable to many sites and tumors. Carcinoma of the lower lip involving almost the entire lip is easily implanted with a good geometric distribution by use of the hollow needle technique. A metastatic lymph node in the submaxillary region is simply implanted by this technique, and can be done with little discomfort to the patient under local anesthesia. It is in this lesion that the postoperative comfort of the patient is most marked in comparison with the discomfort of a rigid implant with radium needles.

In our experience, we find that metastases to the angle of the jaw in the neck have been the lesions most frequently available for iridium implants. Often, these are merely palliative procedures, but, at times, effective implantation irradiation of such a mass can be a factor in a "cure." This was especially evident in a patient whose nasopharyngeal carcinoma was eradicated by radiotherapy, but whose bilateral neck nodes in the parotid region persisted. These were implanted with iridium, and the patient has been free of disease for two years. Some tumors of the mouth are not suitable for the hollow needle technique. These may be treated by suturing the radioactive material with a regular curved needle to the appropriately involved areas. A retromolar angle tumor is particularly suitable for this technique. Tumors of the tonsil and their adjacent node drainage areas can be treated by making a hairpin type of loop of radioactive material by inserting the hollow needle from the skin of the neck medially to pierce the tonsillar area.

When a tumor has been irradiated previously and the implantation distribution must include both irradiated and unirradiated regions, some of the implant can be removed early to reduce the dose in the previously irradiated area.

If the tumor is better treated as a single plane circle than as a rectangular shape, a circle can be made by following the circumference of the circle with a curved needle.

Some special locations of tumors have been treated with unusually effective geometric distribution, and carcinoma of the perineal urethra is a particular case in point. Here, a tumor which was cylindrical and 1 cm. in diameter and 3 cm. long was implanted by encircling it with a coil of nylon ribbon containing iridium. Accessible carcinomas of the vagina and of the anus may also be treated with this technique.

In the treatment of cancer of the esophagus, there are, at times, indications for the use of intraluminal radioactive sources. In the past, radium has been used for this purpose, but the diameter of the radium is so large it obstructs the intraluminal tube for a short period of time while it is in place at the tumor site. Since the radium has to be of considerable activity for a significant dose in the short period of time that the patient will tolerate it, it causes considerable radiation exposure to the personnel who make the device. In contrast, iridium is so fine in its nylon tubing (fits in an 18 gauge needle) that each nylon tubing can be inserted in a conventional gastric feeding tube so that the active material will lie in proper position to irradiate the tumor from within. At the same time, fluids can be introduced around the iridium and through the same gastric feeding tube while the irradiation is going on. In this way, intraluminal irradiation of a carcinoma of the esophagus may be administered over a relatively long period of time, even as long as a week or more.

Special iridium-192 applicators have been devised for irradiation of the internal mammary nodes at the time of radical mastectomy. These applicators are introduced into the internal mammary artery¹ after the patient has left the operating room and is recuperating in her bed. This afterloading technique cuts down on exposure of operating room personnel and helps to irradiate the tissue immediately around the internal mammary artery, the usual site for the nodes, to a rather high dose. Normal tissues are spared. Another technique for implantation of recurrence of carcinoma of the rectum by inserting the nylon ribbons with

only one end sticking out in the perineum has been devised by Liegner.⁵

In summary, the implantation of tumors with radium is a valuable technique whose use appears to be decreasing in frequency for two major reasons. Firstly, suitable accessible lesions are more frequently being removed by surgery, and, secondly, the radiotherapist appears to be hesitant about using radium because of the radiation exposure to which he is subjected. Radium substitutes which provide similar interstitial implantation of tumors, but which have increased flexibility and adaptability and which expose personnel to less radiation

should return many implantable tumors to the radiotherapists' purview.

Iridium-192 in nylon tubing appears to be a useful radium substitute, and it has appropriate advantages over radium. Its only disadvantage is its expense because of its expendability.

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Doctor Carl Potthoff of Omaha served as chairman of the AMA's Committee on Emergency Medical Identification during two years of conferences and studies.

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HYPERCALCEMIA

PART II*

J. H. FOERTSCH, M.D.

A review of the literature indicates that hypercalcemia occurs more frequently than one suspects. The criteria for diagnosis are well established; however, detecting its clinical presence and determining its cause oft times taxes the skill of the most astute.

Pathogenesis of Clinical States Seen in Hyperparathyroidism and Hypercalcemia:

Observations in the human with hyperparathyroid disease have documented the skeletal changes which in the main consist of a softening of bone with consequent deformities and fractures. This result occurs after prolonged and excessive removal of calcium with increased osteoblastic activity in an attempt to repair the damaged trabeculi of the bone, resulting in excess fibrous connective tissue formation and the appearance of cysts and tumors. After removal of hyperfunctioning parathyroid tissue, there

is rapid repair of bone damage with removal of fibrous tissue which is replaced by new bone with a normal appearance. However, bone cysts have a tendency to persist and usually require surgical removal.

It should be noted that massive bone changes are not apt to be found in Americans or other well-nourished nationalities as the diet contains enough calcium to prevent withdrawal of calcium from bone and yet maintain an elevated serum level of calcium.⁸⁵

Stone formation and calcinosis are important alerting signs to the clinician. Many hyperparathyroid cases are discovered during investigation for this type of involvement. However, stone formation and renal calcification are felt to be not entirely due to hypercalciuria, for equivalent degrees of hypercalciuria may be seen in other conditions such as hyperthyroidism, Boeck's sarcoidosis, and idiopathic hypercalciuria. Just why some hypercalcemic states are less apt to produce renal calcification is unknown, and in explanation of Nordin⁸⁶ has shown that an important contributing factor may be reduced renal excretion of hydrogen ion that is known to follow the injection of parathyroid hormone and that in these cases Fourman⁸⁷ suggests that the impaired acidifying power of the kidneys, present in hyperparathyroidism, may be an important feature enhancing the formation of stones.

*Part I of Hypercalcemia appeared in the July issue of the Journal of the Oklahoma State Medical Association.

Hypercalcemia / FOERTSCH

The polyuria and polydipsia seen in hyperparathyroidism probably results from the impairment of renal concentrating power because repeated injections of parathyroid hormone lead to a reduction in renal tubular reabsorption of water.⁸⁸

Other clinical features which may be seen with hypercalcemia are less easy to explain. The acute pancreatitis which appears as one of the more obscure complications of hyperparathyroidism presents an ill-defined pathogenesis. Huerper⁸⁹ showed that excessive parathyroid hormone injections can cause focal pancreatic necrosis in dogs. Another theory proposed is that calcium may precipitate in the ductal system of the alkaline-secreting pancreas and obstruct the flow into the duodenum.⁹⁰

The presence of peptic ulcers (duodenal) with hyperparathyroidism was first reported by Rogers⁹¹ and since then has been confirmed by numerous authors. The incidence has varied from as high as 30 per cent in males with hyperthyroidism to 1.3 per cent in a series of peptic ulcer patients studied by Scandinavian investigators. From the literature, it is difficult to evaluate the effects of parathyroidectomy on the future course of a duodenal ulcer, for in many instances the ulcer recurs after removal of the parathyroid adenoma.⁹² In fact, Miehner⁹³ postulates the tendency for the development of a duodenal ulcer and parathyroid adenoma to be inherited together; this accounts for the frequency of their simultaneous occurrence. Usually these patients have frequent vomiting without evidence of pyloric obstruction, and the ulcer diet, heavy in milk and dairy products, tends to aggravate the vomiting and anorexia.⁹⁴

Neuropsychiatric symptoms were considered very important by Snapper,⁹⁵ and he, as well as Bogdonoff,⁹⁶ emphasized the fact that mental disturbances undoubtedly occur and are probably related to the hypercalcemia, although the cause of mental unbalance is uncertain. One speculates as to the possibility of an inter-twining of hypercalcemia and hypomagnesemia to produce the mental aberrations and the bizarre neurological findings as reported by Agna and Goldsmith.⁹⁷⁻⁹⁸

The calcification that occurs within the

eye has been known to occur in states of hypercalcemia other than that induced by over-activity of the parathyroid glands. Cogan and Henneman⁹⁹ report a case of diffuse calcification of the cornea as the presenting sign of hypercalcemia wherein the cause of hypercalcemia was sarcoidosis. Apparently the deposition of calcium in the cornea and ocular conjunctiva can occur rapidly in the presence of a rising concentration of calcium in the blood and regress gradually when the blood calcium returns to normal and remains at normal levels.¹⁰⁰

HYPERPARATHYROIDISM—PRIMARY

The true incidence of hyperparathyroidism is unknown. It apparently affects the female more often than the male (3:1) and occurs more frequently in the middle-aged. It is rarely found in childhood, although it has been diagnosed from the ages of 14 to 69.¹⁰¹

The pathological changes found in the parathyroid gland in hyperparathyroidism have been divided sharply into two types, neoplasia and hyperplasia.¹⁰² Localized tumors of a single gland, part of a gland, or rarely parts of two glands, are to be regarded as neoplasms. Neoplasms are most commonly in the form of adenoma,^{103, 104} accounting for 88 per cent of cases. Primary carcinoma, resulting in hyperparathyroidism and in metastases is rare.¹⁰⁵ Secondary hyperparathyroidism with hyperplasia of the parathyroid glands occurs when there is an abnormal stimulus to parathyroid activity, resulting from a tendency to hypocalcemia. This is seen clinically in dietary deprivation of calcium, in pregnancy and lactation, in rickets, and in osteomalacia and chronic nephritis. It can be produced experimentally

Since his graduation from the University of Pittsburgh School of Medicine in 1942, J. H. Foertsch, M.D., has been certified by the American Board of Internal Medicine. His practice in Chickasha, Oklahoma is limited to his specialty.

Doctor Foertsch is a Fellow of the American College of Physicians, a member of Alpha Omega Alpha, the Oklahoma Society of Internal Medicine and a member of the Board of Trustees of Blue Cross.

in animals by diet either low in calcium or high in phosphorous.¹⁰⁶ The question as to whether hyperplasia precedes the development of adenoma is unanswered.¹⁰⁷

As has been noted previously, it is now well-recognized that the clinical picture in hyperparathyroidism may be varied. It may be obscure and a simple, single determination of calcium and phosphorous may not be sufficient for diagnosis. In many cases only the serum calcium may be elevated, while the serum phosphorous remains normal and vice versa. Also, abnormalities of the serum chemical findings may vary from day to day and may be within the normal range one day and within slightly to grossly abnormal ranges another day. Classical manifestations in most instances may be absent, with non-specific signs and symptoms so that it is most important for the physician to recognize at least the possibility of hypercalcemia and to suspect the presence of this endocrinopathy.

The diagnosis still depends on the interpretation of laboratory data, for hypercalcemia may be suspected but cannot be proven from clinical manifestations alone. The presence of a serum calcium above 10.5 mg. per cent in the presence of normal serum proteins should be considered suspicious and followed by repeated determinations. The serum calcium studies are still the most important single laboratory finding, and together with the demonstration of depressed serum phosphorous (below 2.4 mg. per cent)¹⁰⁸ would, to a high degree, substantiate the possibility of hyperparathyroidism.

In reference to the serum phosphorous, one must be alerted to the variations pointed out by Greenberg, Winters and Graham¹⁰⁹ in respect to age and sex.

The serum alkaline phosphatase may be of value occasionally, although its level may be increased in a variety of disorders, but values over 15 Bodansky Units are unusual in patients with hyperparathyroidism unless extensive bone change (Osteitis Fibrosa) is present,¹¹⁰ then values of 30 to 40 Bodansky Units may be found.

SECONDARY HYPERPARATHYROIDISM

MacCollum in 1905 reported enlargement of the parathyroid glands occurring second-

dary to another disease, in this instance, nephritis. Erdheim in 1906 noted similar parathyroid enlargement in rickets.²⁰⁶ Since then it is known that secondary hyperparathyroidism occurs in rickets because of a loss of the calcemic action of Vitamin D on bone and in nephritis because of a loss of glomerular filtration resulting in an elevation of the serum phosphorous, stimulating (directly or indirectly) the parathyroid glands.²⁰⁷

The clinical picture is that of the primary disease process (usually uremia) before any evidence of hyperparathyroidism is noted. By the time the clinician determines the serum calcium, the elevated serum phosphorous has depressed the serum calcium levels. However, the author has seen one case of profound renal failure in which all electrolytes, including serum calcium and serum phosphorous were simultaneously elevated. The patient expired a few hours after the chemical determinations were made. This case appears to fit in with those already reported in the literature in which secondary parathyroid hyperplasia is seen as the outcome of renal disease with uremia,²⁰⁸ although autopsy permission was not granted, and we were unable to ascertain the presence or absence of a primary parathyroid adenoma.

HYPERCALCIURIA

Hypercalciuria is present with hypercalcemia in most instances and the establishment of its presence is particularly important when the serum calcium is not elevated or in a borderline range. One must always keep in mind idiopathic hypercalciuria, because this is a difficult factor in the differential diagnosis and plagues investigators. These are individuals who have recurrent renal calculi, who do not have hypercalcemia and frequently have hypophosphatemia.¹¹¹ The difficulty of differentiation occurs especially in those patients with hyperparathyroid disease who do not have hypercalcemia but present hypophosphatemia. Some of these patients with idiopathic hypercalciuria have normal tubular reabsorption of phosphate, and this is helpful, for the hyperparathyroid case presenting hypophosphatemia exhibits markedly decreased tubular reabsorption of phosphate in most instances.¹¹²

The method of establishing the presence or absence of hypercalciuria consists in placing the patient on an Albright diet of 125 mg. total calcium for five days; 24 hour urine specimens are collected on the fourth and fifth days; if the urine calcium on these days is 150 mg. per cent or above, hypercalciuria is present; if it totals 120 mg. per cent, hypercalciuria can be suspected. The Albright diet is a neutral-ash, low-calcium diet and the quantitative measurement of calcium in the urine is a useful procedure in individuals suspected of having parathyroid disease or disturbances of calcium metabolism.¹¹³

The Sulkowitch test for urine calcium is a qualitative test and should be considered treacherous because it does not take into account the urine concentration. A concentrated urine may give a 4+ Sulkowitch reaction, whereas a dilute urine with the same amount of calcium (en toto) for 24 hours may yield a low Sulkowitch reading.¹¹⁴

DIFFERENTIAL TESTS USED TO DETERMINE THE CAUSE OF A HYPERCALCEMIC STATE

Tubular reabsorption of phosphorous: Another most useful test is the tubular reabsorption of phosphate. This test was designed to measure the tubular reabsorption of phosphate by the kidney,¹¹⁵ and depends on the physiological principle that in hyperparathyroidism there is a decreased reabsorption of phosphate by the renal tubules under the influence of parathyroid hormones and more phosphate accordingly appears in the urine. Normally, about 90 per cent of filtered phosphorous is reabsorbed by the renal tubules, and in hyperparathyroid cases, less than 85 per cent of the filtered phosphate is reabsorbed.^{116, 117, 118, 119}

Direct measurements of the tubular reabsorption of phosphate (TRP) is done simply by simultaneous determination of phosphate and creatinine concentrations in the blood and urine. To determine the amount of phosphate reabsorbed by the tubules, it is necessary to measure the quantity of phosphate filtered by the glomeruli and to subtract from this value that quantity of phosphate found in the urine. The quantity of phos-

phate filtered equals the volume of plasma filtered per minute (glomerular filtration rate determined by measurement of the creatinine clearance), multiplied by the serum phosphate concentration. The measurement of creatinine clearance would ordinarily require exact timing in complete collection of urine during this clearance. Fortunately however, exactly the same amount of time and volume of urine are used for urinary excretion of phosphate. Thus, the timing and urine volume cancel out so that the final formula requires neither figure.¹²⁰ One need know only the serum and urine concentrations of phosphate and creatinine to calculate the TRP by the formula:

$$\text{TRP (in \%)} = 100 \times \left(1 - \frac{\text{UP} \times \text{SC}}{\text{UC} \times \text{SP}} \right)$$

Where TRP equals tubular reabsorption of phosphate in per cent UC equals urine concentration of creatinine in milligrams per 100 cc.; UP equals urine concentration of phosphorous in milligrams per 100 cc.; SP equals serum phosphorous in milligrams per 100 cc., and SC equals the serum concentration of creatinine in milligrams per 100 cc. Practically, this test must be conducted at a time when the serum phosphate level is stable, which means, of course, that the patient should be fasting.

By substituting the values obtained into the above formula, one can arrive at the value for tubular reabsorption of phosphorous. The test is not 100 per cent correct but is a valuable adjunct, and when coupled with other information it is of value. One should also be aware that detection depends on the use of creatinine clearance as an index of the glomerular filtration rate and therefore, the test is not applicable in the presence of renal impairment.

When first reported this test was assumed to be specific for hyperparathyroid disease, but low reabsorption values have since been reported in Cushing's syndrome, cirrhosis of the liver, resistant rickets, myxedema, the Fanconi syndrome, and renal calculi.^{121, 122, 123}

The Phosphorous Deprivation Test: The phosphorous deprivation test was proposed by Reifenstein.¹²⁴ This test is based on the assumption that following reduction in the serum inorganic phosphorous level (without a change in the serum calcium concentra-

tion), normal parathyroid glands respond by decreasing their production of hormone while an adenoma of the parathyroid glands, since it is autonomous, does not show any alteration of output in response to the stimulus. For this test the individual eats an identical diet for three to six days wherein the phosphorous content is low (less than 350 mg.), is normal in calcium and adequate in calories. The urine is collected for a 24-hour period at the start, in the middle and at the end of the test period from 9:30 a.m. on the first morning to 9:30 a.m. on the second morning. The phosphorous content is determined for each 24-hour urine specimen, and blood samples for determining the total calcium, the inorganic phosphorous, and the total protein concentrations of the serum are obtained at the start, in the middle and at the end of the test period. An individual with normally-functioning parathyroid glands shows no change in the serum calcium concentration, a rise or no change in the serum phosphorous level, and a marked decrease in phosphorous excretion following several days on a low phosphorous diet. In contrast, the patient with an adenoma of the parathyroid gland should show a moderate rise in the serum calcium concentration, a moderate fall in the serum phosphorous level and little or no change in the excessive urinary phosphorous excretion. This test may be occasionally helpful, especially in a patient suspected of having hyperparathyroidism but presenting a normal serum phosphorous.¹²⁵

Serum Inorganic Phosphorous: Usually hypophosphatemia is expected in all cases of hyperparathyroidism, but unfortunately experience indicates that a wide variation of serum phosphorous values does occur in adenomas of the parathyroid, varying from low to normal values. Chambers and his associates¹²⁶ emphasized that a normal concentration of phosphorous may exist in the serum of patients with hyperparathyroidism who are not azotemic. As has been mentioned above, the phosphorous deprivation test was devised for the purpose of providing help in the differential diagnosis of a patient suspected of a parathyroid adenoma but presenting a normal serum phosphorous. Goldman¹²⁷ reports that as many as 60 per cent of his patients have had serum phosphorous levels within the range of normal.

The Calcium Infusion Test: This procedure was proposed by Howard.¹²⁸ It is based on the principle that following an elevation of the serum calcium level, normal parathyroid glands respond by decreasing production of their hormone, while an adenoma of the parathyroids does not alter production of the hormone in response to increased concentration of calcium in the serum. The level of inorganic phosphorous in the serum and the amount of phosphorous excreted in the urine are used as indices.

The test is conducted as follows: For two successive days the patient should eat an identical diet and the total amount of urine excreted is collected each day from 9:30 a.m. on the first morning to 9:30 a.m. on the second morning. On day "two," about one hour after breakfast, intravenous calcium gluconate, calculated to provide 15 mg. of calcium per kilogram of body weight, is started and continued at a steady rate for four hours. The patient eats lunch at the usual time during the infusion, and blood samples for determining total protein, serum calcium, and serum phosphorous are obtained before infusion of the calcium solution, during the middle of the infusion, and at the end of the infusion, four hours after the end of the infusion and 24 hours after the start of the infusion. The total phosphorous content is determined for each of the 24-hour urine specimens collected.¹²⁹

In persons with normally - functioning parathyroid glands, there is a considerable rise in the serum inorganic phosphorous concentration and marked decrease in urine phosphorous excretion following the infusion of the calcium. In persons with over active parathyroid tissue there is an alteration in the indices, either in the same direction, as in a normal subject but in a much smaller magnitude, or in the opposite direction. Nordin¹³⁰ states that the calcium tolerance test is a further refinement for measurement of the renal handling of phosphate. He gives an infusion of calcium gluconate over a four-hour period (15 mg. of calcium/kilogram of body weight) and states that in normal subjects there is a fall in urine phosphorous excretion to less than half the base level about 12 hours after the infusion. This is almost certainly due to suppression of the parathyroid glands. In primary hyperparathyroid-

ism, no such fall in urine phosphorous excretion occurs, presumably because the tumor is autonomous. He further states that discrimination between a normal and abnormal fall in urine phosphate excretion is obscured if urine is collected for 24 hours instead of every four hours. No great diagnostic value can be attached to the rise in serum phosphate which follows calcium infusion.

Thomas¹³¹ states that the administration of calcium intravenously in 28 patients with hypercalcemia (18 with hyperparathyroidism and ten with hypercalcemia from other causes) induced changes in the phosphorous content of the urine and serum which were quite similar in all and different from those occurring in normal subjects. He concludes that there were no consistent differences in the data derived from patients with hypercalcemia regardless of etiology and found that this procedure has been of very little diagnostic value in differentiating various hypercalcemic states.

The Cortisone Test: The correction of hypercalcemia by corticosteroid therapy was first observed in patients with sarcoidosis.¹³² Since then, large doses of cortisone or its analogues have been found effective in reducing the concentration of serum calcium in many but not all patients with hypercalcemia of non-parathyroid origin.¹³³ Henneman, Carroll, and Dempsey,¹³⁴ showed that the hypercalcemia of sarcoid was accompanied by absorption of an excessive portion of the dietary calcium and by high renal calcium clearance and these abnormalities were corrected by cortisone therapy. The similarity of the physiological findings of the hypercalcemia of sarcoid to those of Vitamin D intoxication was noted by both Henneman and his associates¹³⁵ and Anderson and his associates.¹³⁶ In fact, Anderson predicted that patients with both Vitamin D intoxication and with infantile hypercalcemia would also respond to cortisone therapy with a fall to normal of the elevated serum calcium; this has since been substantiated.

In hypercalcemia due to hyperparathyroidism, cortisone has been consistently without effect upon the hypercalcemia. In certain conditions, notably cancers,^{137, 138} and Hodg-

kin's Disease,¹³⁹ the cortisone test does not give clear-cut, consistent results. On the basis of available information, it appears that a response to the cortisone test excludes hyperparathyroidism as a cause of hypercalcemia. On the other hand, a response to cortisone would indicate a cause other than hyperparathyroidism was present and should alert the clinician to the possibility of Vitamin D intoxication, hyperthyroidism or the presence of sarcoidosis.¹⁴⁰

The test is conducted as follows: Cortisone is administered in a daily dose of 100 mg. (25 mg. every six hours) by mouth for ten days. Measurements of the serum calcium are taken daily from the sixth day on and reduction of serum calcium to a normal figure should not occur in the presence of hyperparathyroid disease. This test is probably of the greatest value in the differential diagnosis of the hypercalcemia of sarcoidosis from the hypercalcemia of hyperparathyroidism. In sarcoidosis, after the ingestion of sufficient cortisone, there is invariably a reduction in the serum calcium to a normal figure and a rise in the urinary quantitative calcium. Howard¹⁴¹ points out that a fall in serum calcium after large doses of cortisone may be artefactual and suggests that the patient have frequent hematocrit determinations, weight measurements or hemoglobin determinations while on cortisone in order to rule out an expanded blood volume, producing dilution and therefore a false fall in serum calcium, as measured in the laboratory. In order to circumvent hemodilution, the physician might include, as part of the test requirement, a low sodium diet.

X-RAY FINDINGS

The most common x-ray findings of the skeleton in primary hyperparathyroidism is osteoporosis, which differs in no way from osteoporosis of other causes. It is only in those cases of hyperparathyroidism with inadequate calcium intake that one is apt to see localized lesions consisting of bone cysts and bone tumors. When osteitis fibrosa is noted, the skull may present a ground-glass or diffusely mottled appearance.

The absence of the lamina dura of the teeth is not characteristic of hyperparathyroidism, because it occurs in other conditions. Goldman¹⁴² feels resorption of bone at the

distal ends, especially of the clavicles, may precede other distinctive radiologic manifestations of hyperparathyroidism. Holt¹⁴³ states that about one-third of the patients with hyperparathyroidism have x-ray signs of the disease. Some of these signs may be barely discernible, others are clearly recognizable. He feels that the cardinal radiologic aspects of this disease consists of subperiosteal bone resorption and this may occur in either primary or secondary hyperparathyroidism. It is most apt to be seen in the bones of the hands and the proximal and medial portions of the tibiae and may also be seen in the proximal and middle phalanges, appearing as a gouge along one side of the bone in the early stage or, when seen in the advanced state, visible as a natural bilateral narrowing of the bone. There is a fine lace-like reticulation in the bone at the outside edge along the margins. This, Holt feels, is quite characteristic. He points out that the presence of a lamina dura in the case of suspected hyperparathyroidism should rule out that diagnosis, but its absence is not specifically diagnostic for the presence of hyperparathyroidism. In addition, all patients suspected of adenoma of the parathyroids should undergo a fluoroscopic examination during the act of swallowing barium, as many times these patients will show a displacement of the esophagus or an indentation of the esophagus which serves as a further substantiating clue for this diagnosis.

THE VARIOUS HYPERCALCEMIC STATES : IDIOPATHIC HYPERCALCEMIA

In 1952, Lightwood and Payne¹⁴⁴ described a disease seen in infancy, resembling hyperchloremic acidosis but in which there was hypercalcemia. Clinical manifestations of this illness varied greatly in severity, but as a rule it appeared as a rather sudden development marked by anorexia, vomiting, loss of weight and constipation in an infant who had been thriving. Also, surprisingly, in these infants the intake of Vitamin D appeared in many cases to be far above the average requirement.

On physical examination, few abnormalities are noted, perhaps the most important finding being the presence of weight loss and slight dehydration. The infants are usually

apathetic but not irritable. The eyes may appear to be slightly sunken and the muscle tone and tissue turgor are generally poor. Fever may or may not be a feature but infection may be found in the urinary tract.

The cardinal biochemical abnormality in these infants is a low level of plasma alkaline phosphatase, hypercalcemia with varying serum phosphorous levels (from low, to normal, to slight elevation).

X-rays of these infants show a spectacular finding. Particularly bizarre is the roentgenographic appearance of the skull and the extremities. The cranial abnormality consists of a marked defect in the bones of the cranial vault which, in extreme cases, may be represented only by vestiges of the frontal and parietal bones, the brain being enclosed in a soft, fibrous membrane.

Graham¹⁴⁵ states that the clinical picture, namely anorexia, listlessness, constipation and thirst with polyuria and slight dehydration, is similar to that described in hypervitaminosis D. Likewise, the biochemical findings appear to be in keeping with those of hypervitaminosis D, namely an elevated serum calcium, a tendency to a low serum phosphorous with an increased excretion of phosphorous in the urine.

It has been proposed that these infants are in some manner more sensitive to Vitamin D than other infants, but Graham¹⁴⁶ indicates that he believes the hypercalcemia and the clinical picture are due to excessive intake or impurities which Vitamin D preparations contain or due to the hypersensitivity of the infant to these impurities. Winters¹⁴⁷ states that the disease is inherited as a recessive trait. The asymptomatic heterozygous state in the parents can often be detected by the findings of a low plasma alkaline phosphatase or by the excretion of phosphoryl ethanol amine. He states that the disease in general may affect three groups of patients. The first group, and the most seriously affected, are the infants described above. The second group of patients is composed of children in whom the symptoms and signs gradually appear after the age of six months; the basic disorder in this group is the same, but the lesions are much less severe and the prognosis is better than in the first group. These children, on the whole, are quite healthy, but they usually exhibit orthopedic abnormalities

or premature loss of deciduous teeth. The third group consists of adults in whom the illness may be first diagnosed during adolescence. These adults experience the disease in a very mild form, showing only undue fragility of the long bones.

The cardinal biochemical abnormality in all three groups is a very low level of plasma alkaline phosphatase. Studies of bone and other tissues indicate that the level of tissue phosphatase is also markedly reduced. In fact, it is this general deficiency that has led to the suggestion that the syndrome be termed "hypophosphatasia."¹⁴⁷ Associated with the deficit of alkaline phosphatase is the excretion of an abnormal phosphorylated compound in the urine of these patients. It is only in the severely affected infants that hypercalcemia appears, for in children and in adult patients the hypercalcemia is absent.

As yet, no satisfactory scheme to explain the chemical abnormalities and their relation to clinical disease exist. It appears that more precise knowledge is needed as to the role alkaline phosphatase plays in normal calcification of bone. Once this data is available, the means to explain the biochemical abnormalities will be available.

THE HYPERCALCEMIA OF HYPERTHYROIDISM

The true incidence of hypercalcemia with thyrotoxicosis is not known, but the effects of thyroid hypermetabolism upon bone was mentioned by von Recklinghausen in 1891, when a necropsy on a woman, age 23 years, who died of thyrotoxicosis, revealed prominent vascular striae in the long bones which split on section "like rotten wood."¹⁴⁸ Thyrotoxicosis is a disease which is recognized in its early stages and responds well to treatment; therefore, overt bone disease in a far-advanced state is rarely seen now.

Aub¹⁴⁹ and his associates in 1929 recorded the increased excretion of calcium and phosphorous in hyperthyroidism. They, and others since, have demonstrated that thyrotoxicosis may result in hypercalciuria and negative phosphorous balance.¹⁵⁰ Generally, the serum calcium level in hyperthyroidism

is normal, but that hypercalcemia does occur is well known and 19 cases have been documented in the literature.¹⁵¹

The mechanism for hypercalcemia in hyperthyroidism is not known. It has been suggested that the parathyroid glands are involved in the calcium-phosphorous loss of Graves disease¹⁵² but the ability of cortisone to lower the blood calcium tends to militate against this theory proposed by Hansman and Wilson,¹⁵³ since the hypercalcemia of hyperparathyroidism is resistant to corticoids. In addition, Bortz¹⁵⁴ found that tubular reabsorption of phosphorous (TRP) did not substantiate the presence of hyperparathyroidism, for the values were reported to be normal or elevated in all but three of his series of 27 patients. In Cook's¹⁵⁵ series of cases the high level of fecal calcium suggested a lack of Vitamin D, but this was excluded when the parenteral administration of 7.5 mg. per day of Vitamin D was without effect on the calcium balance. Cook concludes his observation by stating, "the increase of of serum inorganic phosphorous is very striking and the possibility that bone changes in thyrotoxicosis are a result of a primary disturbance in phosphorous metabolism seems to warrant further investigation."

The presence of hypercalcemia and hypercalciuria in hyperthyroidism may be compound, as seen in the concomitant occurrence of hyperthyroidism and hyperparathyroidism. Jackson,¹⁵⁶ Bortz,¹⁵⁷ Ballin and Morse,¹⁵⁸ Hellstrom,¹⁵⁹ Noble and Borg,¹⁶⁰ Miller and Evans,¹⁶¹ and Aarseth and Bjorgo¹⁶² have reported hyperfunction of the thyroid and parathyroid glands. The presence of thyroid and parathyroid adenomas together is thought to be more than coincidental. That this combination may be a form of adenomatosis as a part of the syndrome of multiple endocrine adenomas as described by Underdahl,¹⁶³ Wermer,¹⁶⁴ and Moldawer,¹⁶⁵ was proposed by Jackson.¹⁶⁶

VITAMIN D INTOXICATION

The fact that irradiated ergosterol in excessive doses produces a toxic effect in both animals and man was recognized shortly after the discovery that Vitamin D possessed anti-rachitic properties. It has been demonstrated repeatedly that experimental animals

can be killed by large doses of Vitamin D, the outstanding pathological finding being a diffuse metastatic calcification involving chiefly the arteriovascular system of the kidneys.

Wells and Holley¹⁶⁷ reported a patient with Paget's Disease who was given five million U.S.P. units of Viosterol for 15 days. Two months later the patient expired from pneumonia. Postmortem examination showed extensive metastatic calcification in the pulmonary alveolar walls, pulmonary veins, renal tubules, renal arteries, and endocardium, stomach and skin. These authors felt that the massive Vitamin D administration was in part responsible for the pathologic calcification but noted that in Paget's Disease there might be an increased ease of mobilization of calcium from the bone and more tendency for deposition to occur in the tissues. Since this time, other cases have been reported in the literature.^{168, 169}

Because of the widespread public use of highly potent vitamin preparations, hypervitaminosis D should be suspected in all cases of hypercalcemia. Careful questioning of the patient should reveal whether massive Vitamin D ingestion has occurred. In adults, Vitamin D poisoning has been associated with the ingestion of approximately 100,000 International Units or more of Vitamin D preparation daily for a prolonged time; in infants with the administration of 20,000 to 40,000 units of Vitamin D per day, hypervitaminosis D may appear. The critical level for Vitamin D toxicity is 3,000 to 5,000 units per kilogram of body weight per day.¹⁷⁰ Unless interrupted, the toxicity may be fatal. Weech¹⁷¹ points out that in the treatment of active rickets, a dose of 5,000 U. of Vitamin D is quite satisfactory to effect proper therapeutic response.

Laboratory examinations reveal an increased serum calcium level, essentially normal serum alkaline phosphatase values, while the serum phosphorous levels may be high, normal or low, depending on the phosphorous intake. Kidney damage is indicated by albuminuria, casts, elevated blood urea nitrogen and poor renal concentrating power.

The absence of an elevated serum alkaline phosphatase level is useful in differentiating

this condition from hyperparathyroidism, as is the cortisone test. However, the hypercalcemia associated with multiple myeloma, neoplasms with or without skeletal lesions, hyperthyroidism and certain cases of lymphoma need differentiating by means of x-ray, history, serum protein studies and bone marrow examination.

MILK-ALKALI SYNDROME

Cope¹⁷² described short-lived alkalotic episodes with hypercalcemia and Burnett¹⁷³ *et al.* described the more chronic changes characterized by hypercalcemia without hypercalciuria or hypophosphatemia, a normal serum alkaline phosphatase, soft tissue calcinosis and advanced renal damage with azotemia. In discussing the milk-alkali syndrome, Rifkind¹⁷⁴ and his associates emphasized that there is often a failure in the literature to differentiate between acute alkalotic episodes with hypercalcemia (Cope) as distinguished from the chronic cases of Burnett.

In 1949, Burnett¹⁷⁵ and his associates described a syndrome occurring in patients who ingested milk and absorbable alkali for prolonged periods of time. They suggested several features which they felt favored the diagnosis of their syndrome rather than primary hyperparathyroidism, though they pointed out that this condition must be excluded. These were: hypercalcemia with a history of prolonged intake of milk and alkali, no hypercalciuria or hypophosphatemia, absence of skeletal changes and a raised serum alkaline phosphatase, the presence of renal insufficiency with milk alkalosis, calcinosis and, finally, improvement on a low calcium and alkali intake. Therefore, by definition, the term "milk-alkali syndrome" should be applied to the chronic cases characterized by soft tissue calcinosis and advanced renal damage; that the differentiation of the syndrome from primary hyperparathyroidism is difficult is conceded. Further complicating this is the fact that peptic ulcer may be associated with primary hyperparathyroidism.¹⁷⁶

Some observers feel that the milk-alkali syndrome does not exist as an entity and view all cases as hyperparathyroidism until proven otherwise. Kyle¹⁷⁷ presented a case

which conformed to the criteria of Burnett and his associates but in which a parathyroid adenoma was subsequently demonstrated. Other authorities accept the chronic milk-alkali syndrome as an entity, and it is reported as such in the literature. Particularly strong evidence for its existence as an entity is the fact that serum calcium levels eventually return to normal after cessation of a large calcium intake and absorbable alkalis. It should be noted that in many cases of the milk-alkali syndrome hypercalcemia may not disappear until initial improvement in renal function occurs, and the hypercalcemia may persist for many months after the cessation of large calcium intake. Rifkind¹⁷⁸ reported that in his patient there was a widespread osteosclerosis (this type of bone change is against the diagnosis of primary hyperparathyroidism, and in fact is contrary to the original description of Burnett, who emphasized the absence of skeletal changes), and this might indicate another factor amplifying the case for milk-alkali syndrome representing a true entity. Thus, in small cases of hypercalcemia, a bone biopsy may be of great diagnostic help.

The pathogenesis of hypercalcemia without hypercalciuria and hypophosphatemia as appear in the milk-alkali syndrome is not understood. As presented earlier in this paper, it appears that the absorption of calcium is facilitated by factors favoring a more acid reaction in the upper intestinal tract. The reported cases in the literature (with one exception—Snapper's case¹⁸⁰ had no history of an excessive intake of milk), have all ingested large amounts of calcium as a result of excessive milk consumption, or calcium powders or both. In general, an increase in oral intake of calcium appears to increase the amount absorbed and, within certain limits, to augment the urinary excretion of calcium. The fecal and urinary excretion of calcium should act as a compensatory mechanism and prevent the development of positive calcium balance and probably does in the absence of renal disease. Randall¹⁸¹ feels that there is an increase in total body calcium because of the negative calcium balance which appears following the cessation of milk and alkali ingestion in this

syndrome. He further points out that if it could be shown that there is an increase in the miscible calcium pool in all patients with milk-alkali syndrome, it would be necessary to decide whether this increase develops as a result of shrinkage of bone mass as seen in hyperparathyroidism or as a result of adding on to the surface of bone crystals, additional calcium as a secondary result to continued positive calcium balance. He concludes that it is possible for bone to accept enormous calcium loads before hypercalcemia appears but speculates that this "buffer" mechanism might become saturated during the prolonged calcium-loading in some ulcer patients so that hypercalcemia results.

The absence of hypercalciuria in the milk-alkali syndrome also poses a problem when attempts are made to explain the mechanisms involved; conjectures and assumptions rather than facts must be used. The excretion of acid, and the conservation of base, is one of the major functions of the kidney. Normally, two mechanisms are involved: (1) Ammonium ion is produced by renal tubular cells, this to exchange with fixed cations in the tubular urine and (2) the acidification in the tubules of filtered buffers, namely phosphate, to produce an acid urine. If damaged kidney tubules exhibit a decreased ability to excrete acid urine and to produce ammonium ions, it follows that calcium, potassium and sodium (the most available cations) will be excreted in increased amounts in the urine.¹⁸² In fact, calcium appears to be one of the ions more readily lost so that hypocalcemia may appear and, in turn, initiate the mechanism producing hyperplasia of the parathyroid glands. As the theory is developed in relation to the absence of hypercalciuria in this syndrome, it appears that renal tubular damage is increased through the deposition of calcium salt within the tubules of the kidney and an increase in the alkalinity of the tubular and peritubular fluids occurs with dehydration and vomiting, all of which enhances the appearance of metabolic alkalosis which further damages the kidney,¹⁸³ so that there is a reduction in renal ability to excrete nitrogen products, a loss of concentrating ability, a loss of ability to excrete calcium which facilitates the development of further hypercalcemia and pathological deposition of calcium salt in soft

tissues.¹⁸⁴

In summary, in the chronic milk-alkali syndrome there appears to be renal damage which interferes with the handling of calcium by the kidney in its accustomed manner so that calcium is no longer excreted in the urine, and this, accompanied by increased calcium intake, produces hypercalcemia.

THE HYPERCALCEMIA OF BOECK'S SARCOIDOSIS

Hypercalcemia was first observed in sarcoidosis by Harrell and Fisher.¹⁸⁵ At that time the renal involvement in sarcoidosis was generally attributed to granulomatous involvement of the kidney, and it was felt that this was the causative agent of the hypercalcemia as it might appear in Boeck's sarcoidosis. Since 1939 hypercalcemia with sarcoidosis has been recognized with increasing frequency. One series of cases estimated the presence of an elevated serum calcium level at 20 per cent to 30 per cent.¹⁸⁶

The laboratory findings in sarcoidosis with hypercalcemia include elevated blood and urine calcium levels, normal or elevated serum inorganic phosphorous levels, normal serum alkaline phosphatase values and low fecal calcium values.

The pathogenesis of hypercalcemia and sarcoidosis at one time was thought to be related to hyperproteinemia, but Dent's¹⁸⁷ findings discredited this theory. Also abandoned was the theory of parathyroid over-activity as autopsy evidence did not offer support.¹⁸⁸ Anderson *et al.*¹⁸⁹ pointed out that the hypercalcemia of sarcoidosis may be due to the elaboration of a substance similar to Vitamin D with these patients absorbing excessive amounts of calcium and phosphorous from the gastro-intestinal tract, resulting in low fecal calcium levels. They also pointed out that urine calcium excretion was in excess of dietary intake, attributing this to endogenous Vitamin D, emphasizing that the metabolic abnormality of sarcoidosis with hypercalcemia closely resembles Vitamin D intoxication, *i.e.*, increased urinary excretion of phosphorous, loss of serum phosphorous, demineralization of bone, increased serum calcium and hypercalciuria. To date, no endogenous Vitamin D in sarcoidosis has been isolated,

and Goetz¹⁹⁰ suggests that patients with sarcoidosis are more sensitive to actinic rays than normal people or that they are unable to inactivate Vitamin D or that both of these conditions obtain. In support of these postulates, he notes that Henneman¹⁹¹ reported two patients presenting the hypercalcemia of sarcoidosis who were successfully treated with cortisone but reverted to high serum calcium levels when exposed to sunny weather. He further states that impairment of the inactivating mechanism for Vitamin D is suggested by the fact that patients with sarcoidosis are much more susceptible to Vitamin D poisoning than normal persons. Jackson¹⁹² proposes that a primary renal defect yields hypercalciuria in sarcoidosis and that this in turn causes a decrease in fecal calcium as a compensatory factor.

The mechanism of cortisone action reducing the hypercalcemia of sarcoidosis is unknown but it has been suggested that the general similarity in the molecular structure of cortisone and Vitamin D may lead to a substrate competitive mechanism which would eliminate Vitamin D and thereby decrease calcium absorption.¹⁹³ Cortisone will and does cause prompt reduction in the amount of serum calcium in sarcoidosis, and in one instance the lack of response to cortisone in a patient with sarcoidosis led the clinician to suspect an associated hyperparathyroidism. This suspicion was confirmed by surgery and removal of the adenoma resulted in the reduction of serum calcium levels to normal.¹⁹⁴ It would appear then that the hypercalcemia of Boeck's sarcoidosis, when present, is due to an increased absorption of calcium from the gut by a mechanism unknown, and that the excessive serum calcium is depressed by administration of corticosteroids; this also serves as a valuable test in differentiating this type of hypercalcemia from that of hyperparathyroidism.

OTHER CAUSES OF HYPERCALCEMIA

The hypercalcemia occurring after immobilization, such as is seen in children with poliomyelitis or in elderly adults with bone fractures, or patients with Paget's Disease, is presumably due to a reduction in the rate of bone formation with a continued or accelerated rate of bone resorption.¹⁹⁵ It has long been known that prolonged bed rest in-

duces negative nitrogen balance and a possible mechanism may center about the failure to lay down new osteoid tissue (protein matrix) into which calcium phosphate crystals are imbedded to form new bone thus permitting increased bone resorption over bone formation.

Hypercalcemia, as one of the manifestations of malignant disease is well documented. High serum calcium levels have been reported in carcinoma of the lung, breast and kidney in addition to multiple myeloma and lymphomas.^{196, 197} The mechanism producing hypercalcemia has never been clearly defined. Laszlo¹⁹⁸ reports that in breast carcinoma the sequence of events in hypercalcemia secondary to osteolytic metastases appears to be: (1) excessive bone breakdown, (2) mobilization of calcium and phosphorous, (3) hypercalciniuria and hyperphosphaturia, (4) hypercalcemia, and (5) renal impairment. He states that the hypercalcemia of osteolytic lesions does not appear to be caused by primary renal impairment but that the renal dysfunction is secondary to prolonged hypercalciniuria and hypercalcemia. He further states that a similar process appears to take place in patients with osteolytic metastases secondary to other types of malignancy and therefore this process does not appear to be specific for breast carcinoma but can be considered characteristic of skeletal destruction, regardless of cause. In addition, the osteoblastic type of metastatic tumor is characterized by an avidity for retention of mineral, subnormal urinary calcium excretion and abnormal calcium retention. It appears that the work of Laszlo might offer some explanation for the appearance of hypercalciniuria in osteolytic types of metastatic carcinomas in which bone destruction is excessive and would tend to explain hypercalcemia in osteoblastic types of bone lesions in which there is mineral retention and subnormal urinary calcium excretion with abnormal calcium retention.

The presence of hypercalcemia without demonstrable skeletal lesions obviously could not be explained by the postulates of Laszlo and new tenets were needed to explain this condition adequately. Plimpton and Gellhorn¹⁹⁹ described cases of hypercalcemia of malignant disease without evidence of bone

destruction and have shown that the removal of the primary tumor in some cases reduces the serum calcium level. Plimpton and Gellhorn²⁰⁰ further suggested that these tumors might produce a substance similar to Vitamin D which increased the calcium absorption of the gastro-intestinal tract. Plimpton and Gellhorn,²⁰¹ as well as Albright and Reifenstein,²⁰² and Connor,²⁰³ *et al.* suggested that malignant tumors may produce a substance with properties similar to parathyroid hormone. Stone²⁰⁴ *et al.* recently have suggested that tumor masses may be capable of producing an unknown substance which they termed "substance X." This, in turn, stimulates the parathyroids so that consequent hypercalcemia and bone destruction occur.

Upon analysis, it appears that all these theories are shaky, for in some cases of malignancy the hypercalcemia can be depressed by administration of cortisone, which supports the postulate that the tumors might produce a substance like Vitamin D and would militate against the concept of the tumor releasing a parathyroid-like hormone or a substance stimulating the parathyroid glands. On the other hand, those cases of malignancy with hypercalcemia not responding to cortisone tend to negate the theory of a defect functioning somewhat similar to that attributed to producing the hypercalcemia of Boeck's sarcoid and tend to support the concept of a substance similar to parathyroid hormone or to "substance X."

More than obscure is the hypercalcemia which can be present per se in cases of leukemia and polycythemia.²⁰⁵

SUMMARY AND CONCLUSIONS

Hypercalcemia can no longer be regarded as a rare clinical state. Methods of serum calcium determination are variable but any laboratory using a precise and reproducible procedure should permit the clinician to discriminate between normal and abnormal serum calcium and those due to laboratory error.

In clinical practice, the urgency of conducting serum calcium and phosphorous studies is amplified by the presence of renal stones or a history of renal stones. Since renal pathology may be the only manifestation of hypercalcemia, the determination of serum and urine calcium should be a routine

procedure in all patients with these difficulties. In addition, the presence of any obscure skeletal disturbance as well as any unusual soft tissue calcification demands differential studies which necessarily include those of calcium metabolism.

The symptoms of hypercalcemia are divergent and obscure, yet the bizarre character of the symptoms may alert the physician's suspicion.

Once hypercalcemia is established, differential studies must be carried out in order to affix an etiology. This is by no means a simple procedure, for even with ancillary tests, overlapping of results may occur in widely divergent clinical states. The various differentiating tests for hypercalcemia have their champions and their challengers; however, it is probably safe to assume that hypercalcemia which is depressed by cortisone is not due to hyperparathyroidism.

The recent purification and isolation of the parathyroid hormone may eventually culminate in the perfection of further test procedures to give the clinician a more precise and definite method of diagnosis. □

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304 Petroleum Building, Chickasha, Oklahoma

COLLECTIVE BARGAINING

Non-profit voluntary hospitals in New York City must now bargain collectively under a new state law effective July 1, 1963. Through an amendment to the state labor relations act, collective bargaining was made mandatory, but other provisions of the amendment contain anti-strike regulations and stipulate the use of compulsory arbitration machinery. Governor Rockefeller favors the extension of the law to include hospitals throughout the state.

Chloroquine Retinopathy

JAMES H. ELLIOTT, M.D.
JAMES B. MILLS, M.D.

*Clinical evidence has indicted chloroquine
as a cause of irreversible retinopathy.
Two illustrative cases and a review of
the literature are presented.*

SYNTHETIC antimalarial drugs have become useful therapeutic agents since 1951, when Page^{1,5} noted a beneficial effect of quinacrine (Atabrine) in lupus erythematosus. Quinacrine caused discoloration of the skin and in some instances aplastic anemia after long continued use. Dame (1946)³ found evidence of retinal changes and central visual field defects were related to high quinacrine blood levels.

Chloroquine (Aralen) and some related compounds have logically been substituted and gained wide acceptance since they do not cause discoloration of the skin. They are now used for treatment of malaria, amebiasis, rheumatoid arthritis, lupus erythematosus and actinic dermatitis. Symptoms of headache, gastrointestinal disturbances, lymphedema of forearms and hand, nervousness, feelings of "sea sickness," pruritus and findings of urticaria, dryness and exfoliation of skin, alopecia, discoloration or greying of the hair and weight loss have all been reported in patients taking chloroquine. Leukopenia has also been reported.¹⁶

This paper is written to acquaint physicians who are using the synthetic antimalarials with the serious visual disorders which may ensue. Evidence is accumulating that some patients on long term therapy with chloroquine develop permanent retinal changes with resultant marked visual disability. As of this date, fourteen cases of chloroquine-linked retinopathy have been described in the literature. Cambiaggi,² in 1957, first reported a case of decreased visual acuity in a patient with lupus erythematosus. Cambiaggi did not incriminate chloroquine as the cause of visual loss, but felt it was due to her systemic lupus. Goldman and Preston⁷ in the same year reported retinal changes in two patients taking chloroquine, but failed to describe the ophthalmoscopic findings. Sternbern and Laden¹⁸ in 1959 reported a patient with bilateral macular degeneration after three and one-half years of chloroquine therapy for lupus erythematosus. Hobbs, *et al.*¹¹ (1959) reported three cases with permanent retinal change due to chloroquine therapy and alluded to another case. Nine other cases with serious visual impairment associated with chloroquine therapy have since appeared in the literature.^{4, 5, 10, 14, 16, 17, 19} We have had an opportunity to observe two cases which show retinal changes and visual field changes coincident with chloroquine therapy.

Case Report No. 1: A.L.D., a 61-year-old white housewife had been treated for rheumatoid arthritis since March 1956, with Aralen. In July 1958 she discontinued the drug because it blurred her vision. She took

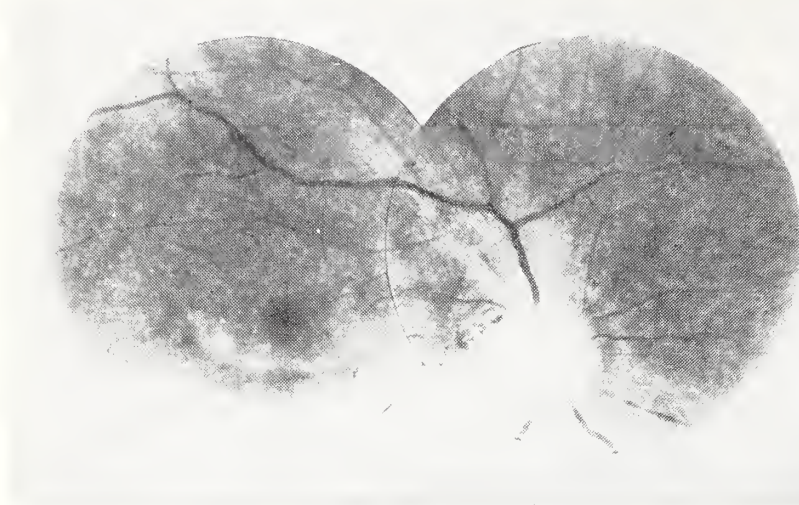


Figure 1a.

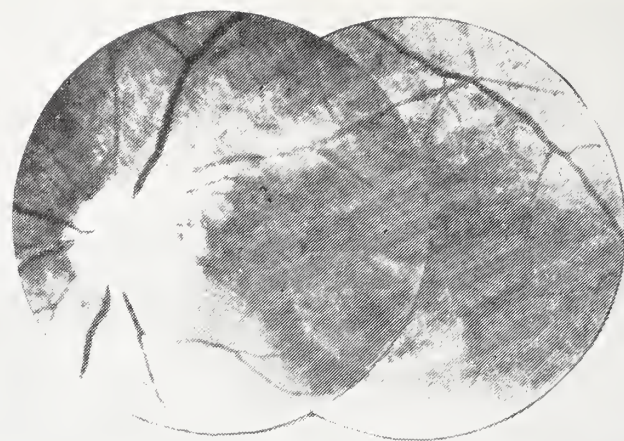


Figure 1b.

Figure 1a. Right eye. There is physiologic cupping of the disc, narrowing of the arterioles and marked macular degeneration.

Figure 1b. Left eye. Similar arteriolar narrowing and marked macular degeneration is present. There was normal cupping of the disc.

Camoquin and Plaquenil in varying doses from August 1958 to May 1961. She was restarted on Aralen in May 1961 and remained on it until March 1962. Dosage ranged from 250 mg. to 750 mg. daily while on Aralen.

The patient was first seen in the eye clinic in April 1960, where vision was noted to be 20/100 in both eyes. This was her first recorded measurement of visual acuity. The

maculae were normal at that time. Visual field, however, revealed pericentral scotomata in both eyes. In March 1961, bilateral macular degeneration was noted. Visual fields in December 1961 showed progressive field changes. Because of the strong evidence that her decrease in vision was due to Aralen, the drug was discontinued in March 1962. Her blood pressure was 120 mm. of Hg. systolic and 70 mm. of Hg. diastolic.

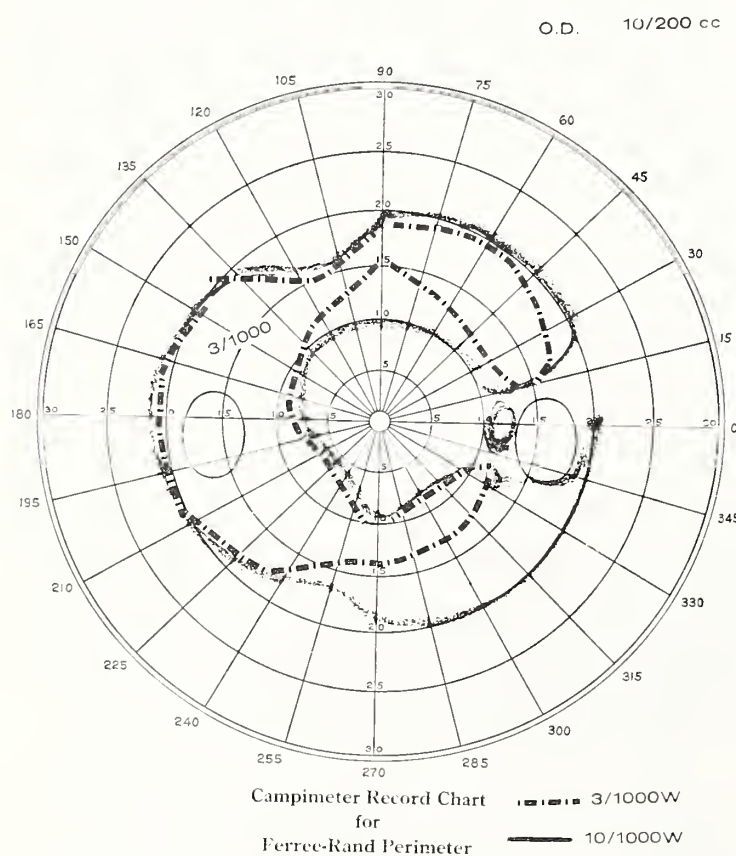


Figure 2a.

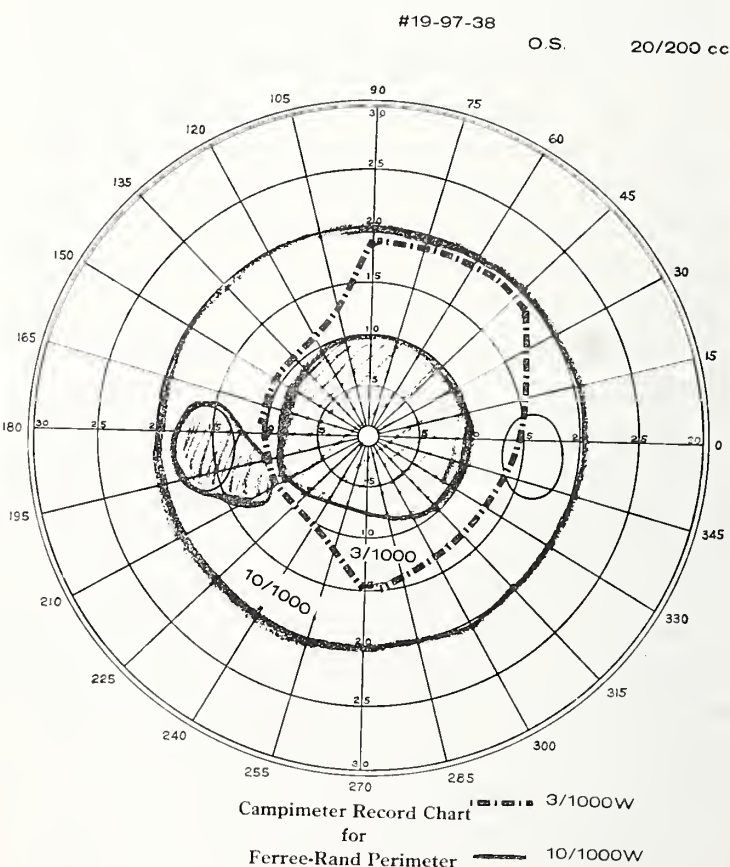


Figure 2b.

Figure 2a (Right eye) and 2b (Left eye). Visual field examination of Casel.

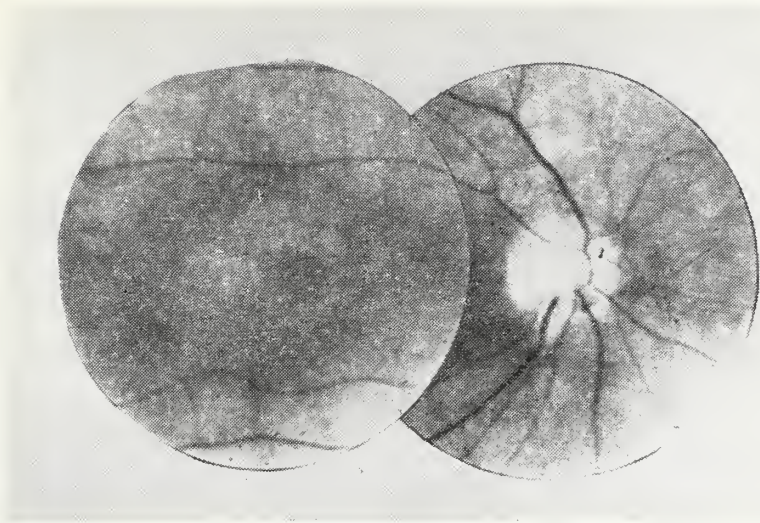


Figure 3a.

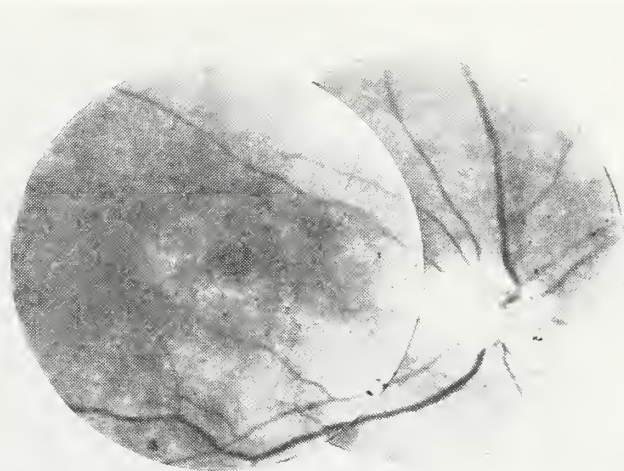


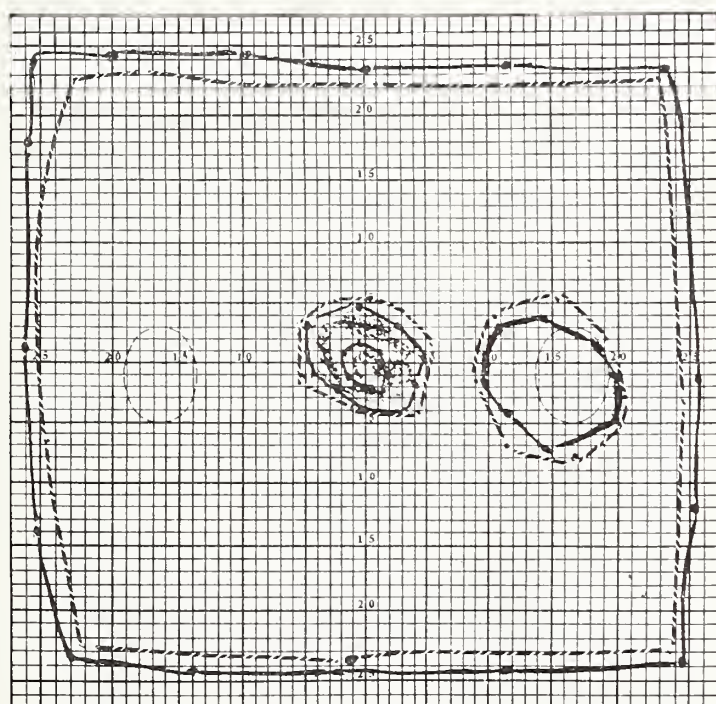
Figure 3b.

Figure 3a (Right eye) and 3b (Left eye). There is generalized arteriolar narrowing and moderate macular pigmentation.

Ophthalmological examination revealed the following: Visual acuity right eye 1/200, left eye 10/200. The external examination was within normal limits, as was the biomicroscopic examination. The tension was within normal limits. The fundus of the right eye revealed marked visualization of the choroidal vessels, physiological cupping of the disc and marked narrowing of the arterioles (figure 1a). There was marked macular degeneration. The fundus of the left eye was essentially the same (figure 1a). The visual fields revealed central sco-

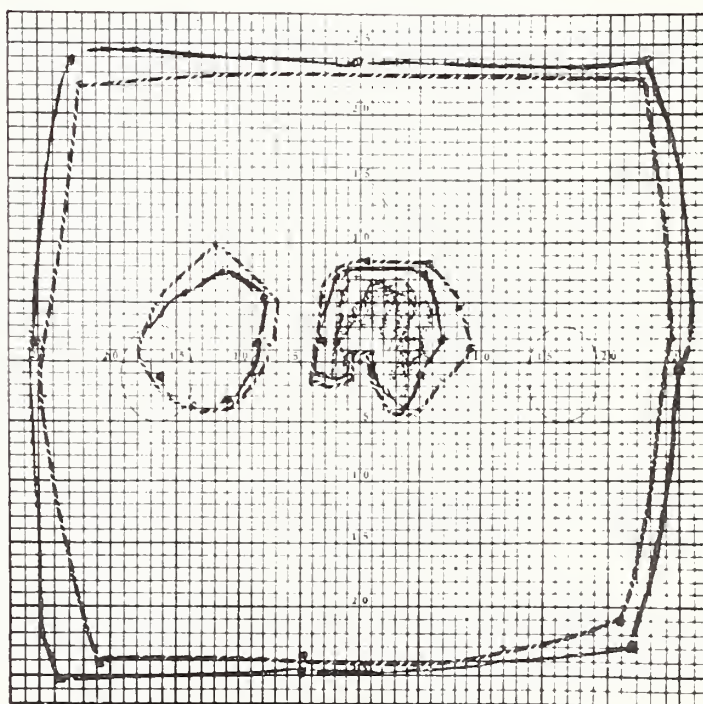
tomato of 10 degrees in both eyes (figures 2a and 2b).

Case Report No. 2: V.C., a 47-year-old white housewife had been treated for rheumatoid arthritis with Aralen since September 1955. She continued until April 1958, when it was withdrawn because of symptoms of "eye fatigue" and decreased night vision. In 1960, she had a three weeks' renewal of the drug, but discontinued it on her own volition because of the same symptoms. Dosage was 500 mg. daily for the majority of the time patient was on drug.



5/1000W ——— O.D.
3/1000W - - - - -
OD 20/30 + 3
OS 20/200 Corrected

Figure 4a.



5/1000W ——— O.S.
3/1000W - - - - -

Figure 4b.

Figure 4a (Right eye) and 4b (Left eye). Visual field examination of Case 2.

TABLE I
INCIDENCE OF CORNEAL CHANGES IN PATIENTS
ON LONG TERM SYNTHETIC ANTIMALARIALS

Author	No. Patients Examined	Patients with Corneal Changes	%	Drug
Hobbs and Calnan	28	22	78.5	Chloroquine
Kersley and Palin	32	14	43.75	Camoquin & Plaquenil
Hobbs, Eadie & Sommerville	165	55	33.3	Chloroquine

Her visual acuity in 1953 was 20/25 in both eyes and was correctable to 20/20 in both eyes. In October 1960, her best vision was right eye 20/25, left eye 5/400. Her blood pressure was 124 mm. of Hg. systolic and 76 mm. Hg. diastolic.

Ophthalmological examination revealed the following: Visual acuity right eye 20/20 with correction, left eye 5/200 with correction. The external examination was within normal limits as was the biomicroscopic examination. The tension was within normal

limits. The fundus of the right eye revealed generalized arteriolar narrowing, moderate macular pigmentation and a normal choroidal pattern. Discs were normal in each eye (figures 3a and 3b). Visual fields in the right eye revealed a pericentral scotomata and in the left eye a paracentral scotomata (figures 4a and 4b).

Although these patients did not have corneal epithelial deposits at the time of their examinations, they have been observed by many authorities in patients under treatment with synthetic antimalarial drugs. Chloroquine has been observed to cause this phenomenon by Hobbs and Calnan (1958);⁹ Hobbs, Eadie and Sommerville (1961);¹⁰ Calkins (1958);¹ Zeller and Deering (1958);²⁰ Leopold (1958);¹³ and others.^{6, 8} Amodiaquin (camoquin) and hydroxychloroquine (plaquenil) also produce corneal changes.¹²

Visual symptoms from corneal epithelial

TABLE II*

Case	Diagnosis	Age Sex	Daily Chloroquine Dose	Corneal Deposits	Visual Acuity		Visual Field Loss	Retinal Changes
					OD	OS		
Cambiaggi	Systemic Lupus	37F	500 mg. 2 yrs.	not reported	20/40	20/30	constricted to 10°	narrowed arterioles pig. degn.
Sternberg	Discoid Lupus	34F	500 mg. 2½ yrs.	not reported	not reported	not reported		macular degn.
Hobbs No. 1	Discoid Lupus	68M	100-600 mg. 3½ yrs.	yes	20/30	20/20	paracentral peripheral	narrowed arterioles pig. degn.
Hobbs No. 2	Rh. arthritis	60F	200-300 mg. 3 yrs.	no	20/30	20/30	paracentral	narrowed arterioles
Hobbs No. 3	Arthritis	66F	400 mg. 3 yrs.	yes	20/60	20/40	peripheral	narrowed arterioles
Fuld	Rh. arthritis	34F	600 mg. 2½ yrs.	not reported	not reported		central scotomata	macular degn.
Ellsworth and Zeller No. 1	Rh. arthritis	46F	Variable 2 yrs.	yes	20/200	20/70	paracentral peripheral	narrowed arterioles pig. degn.
Ellsworth and Zeller No. 2	Systemic Lupus	22F	1000 mg. 3¾ yrs.	yes	20/30	20/30	paracentral peripheral	narrowed arterioles pig. degn.
Ellsworth and Zeller No. 3	Rh. arthritis	34F	200-300 mg. 2 yrs.	no	20/40	20/60	paracentral peripheral	narrowed arterioles macular degn.

*Summary of cases of chloroquine retinopathy as published by Ellsworth and Zeller (1961).

TABLE III*

Case	Diagnosis	Age Sex	Daily Chloroquine Dose	Corneal Deposits	Visual Acuity		Visual Field Loss	Retinal Changes
					OD	OS		
Hobbs, <i>et al.</i>	Discoid Lupus	43F	400-600mg. 3 yrs.	no	20/30	20/40	peripheral	narrowed arterioles pallor of discs
Wilson	Actinic dermatitis	22F	250-750mg. 6 yrs.	no	20/20	20/20	constricted to 5, with peripheral islands	narrowed arterioles pig. degn.
Reed and Campbell	Rh. arthritis	55F	250mg. 1 yr.	yes	20/60 to 20/120	20/60 to 20/120	cecocentral	none
Sataline and Farmer	Lupus Erythematosus	40M	500mg. 15 mo.	no	20/20	20/20	peripheral constriction to 12°	none
Mayer	Rh. arthritis	30F	500mg. 5+ yrs.	no	20/25	20/25	paracentral ring	narrowed arterioles macular degn.
Elliott and Mills	Rh. arthritis	61F	250-500mg. variable 7 yrs. (Plaquenil)	no	1/200	10/200	central scotomata	narrowed arterioles macular degn. pig. degn.
Elliott and Mills	Rh. arthritis	47F	250-500 mg. 3 yrs.	no	20/20	5/200	pericentral paracentral	narrowed arterioles macular degn.

*Summary of cases of chloroquine retinopathy which have appeared in the literature since article by Ellsworth and Zeller.

deposits are usually restricted to haloes around naked lights, blurred vision and focusing difficulties.^{1, 6} Thirty-four of 55 patients with corneal changes studied by one group were asymptomatic.⁶ In this same group there was no measurable reduction of visual acuity attributed to the corneal changes. One author reported a case with corneal deposits and decreased visual acuity.⁶ All authors concur that corneal changes tend to regress after therapy is discontinued. Table 1 shows the incidence of corneal changes in several series reported in the literature.

The classical retinal changes are narrowed arterioles and pigment degeneration in the macula and peripheral retina.⁴ However, variations of the above findings may be seen. In Wilson's case the choroidal vessels were clearly seen, the retinal arteries were straight and narrow, the optic discs were pale, the macula were edematous and an irregular mottled pigmentation was present in

both fundi without aggregation of the pigment around retinal vessels.¹⁹ Reed and Campbell¹⁶ (1962) have reported a case with reduced visual acuity in each eye and dense central scotomata in each eye with no funduscopic changes. She had taken chloroquine (250 mg./day) for one year. One month later Sataline and Farmer¹⁷ described a case with no decrease in visual acuity but narrowing of the visual fields to 12° in all

James H. Elliott, M.D., graduated from the University of Oklahoma School of Medicine in 1952. At present he is on a post-doctoral fellowship at the Howe Laboratory at Massachusetts Eye and Ear Infirmary.

Doctor Elliott is a member of the Association for Research in Ophthalmology.

James B. Mills, M.D., graduated from Creighton University Medical School in 1959. His private practice in Oklahoma City is limited to his specialty, Ophthalmology.

quadrants in each eye. This patient showed no fundusoscopic changes after fifteen months of chloroquine therapy (500 mg./day). They suggested these changes represented an early phase of chloroquine retinopathy.

The symptoms of retinal involvement may be blurring of vision, night blindness and complaints of decreased central vision. The typical field changes appear to begin with paracentral and ring scotomata which break through to the periphery.² Ceco-central and central scotomata are also seen.^{5, 16} Some patients will show only peripheral constriction of the visual fields.^{2, 17}

The visual acuity in all cases show little, if any, improvement after discontinuance of therapy. Steroids and vasodilators have been ineffective in reversing loss of visual function. Because of reports that acidifying the urine promotes excretion of quinacrine and related compounds, one patient was given methionine 0.5 gms. four to six times daily without improvement in visual loss¹⁶. Although antimalarials other than chloroquine have not been directly involved in retinal changes, Hobbs, *et al.*,¹¹ concluded that since all of them had been known to produce corneal changes, it is possible that these, too, may cause retinal damage—at least in the dosage required for treatment of rheumatoid arthritis and lupus erythematosus.

Table 11 is a summary of cases of chloroquine retinopathy which had appeared in the literature up to August 1961. Ellsworth and Zeller⁴ reviewed six cases and added three cases of their own. Table III is a summary of cases of chloroquine retinopathy which have appeared since August 1961 in the literature and include two of our cases. All cases summarized have taken chloroquine for periods of one to six years. In order to prevent serious retinopathy from developing we feel the antimalarials should be given with great caution. Any patient on long term continuous therapy should have the benefit of periodic ophthalmic examinations. This examination should include visual fields, since early defects in the visual fields could well signal an ensuing retinopathy.

Two cases of retinopathy associated with chloroquine therapy are presented. The retinal changes caused by chloroquine are described and retinal photographs are shown. Patients with chloroquine retinopathy may or may not exhibit corneal changes. The visual loss and visual field loss from chloroquine retinopathy are irreversible. Serious visual disability in patients on long term antimalarial drugs may be avoided if they have the benefit of periodic ophthalmic examinations.

Addendum: Since this paper was submitted for publication in June, 1962, numerous other case reports incriminating long term chloroquine therapy as the cause of an irreversible retinopathy have been published. Patients, in whom long term chloroquine administration is contemplated, should have initial base line ophthalmic examinations to determine any pre-existing visual abnormality. During course of therapy, patients should have ophthalmic examinations at three-month intervals. Any visual deficit, not pre-existing, should signal the termination of chloroquine medication. □

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- James Elliott, M.D.
16 Denton Road, Wellesley, Massachusetts

ABSTRACTS

MAN AGAINST MACHINE

The high speed of an electronic computer has been utilized by Hughes et al. to prognosticate the future of patients suffering an acute myocardial infarction, and to determine which of several factors seem to have the greatest effect on the course of the disease in a patient.*

The records of 445 patients with a diagnosis of myocardial infarction admitted to three Oklahoma City hospitals over a seven-year period were used as the "working material." Numerous variables ranging from blood pressure and leukocyte count on admission to a history of diabetes were analyzed, and the significance of one or more complications was determined in terms of their influence on a fatal or non-fatal outcome of the attack.

A poor prognosis was indicated for females, those with a previous infarction, diabetes, conduction disturbances, arrhythmias, congestive failure and shock. Those with a single complicating factor of diabetes or angina appeared to do as well as those with no complications. The single complication of pulmonary infarction or shock, however, is most ominous.

By use of their statistical technique, known as "linear discriminant analysis," the computer did a better job (91.7 per cent accuracy) of forecasting the outcome of the patient than did a group of clinicians (68 per cent accuracy) given the same data on 38 patients selected at random from the whole group.

REVIEWER'S NOTE: While it is most disquieting to be "aced-out" by a tangle of wires and tubes (and this reviewer is one of the clinicians who was), it is also a good feeling to realize that these electronic oracles can help us sift the important from the trivial and thereby help us to learn. In short, if you ask them a question, they are likely to give you the correct answer. They do not, however, make house calls at night.

*Myocardial Infarction Prognosis by Discriminant Analysis. William L. Hughes, John M. Kalbfleisch, Edward N. Brandt, Jr., and J. Paul Costiloe. *Archives of Internal Medicine* 111: 338-345 (March) 1963.

GASTRIC JUICE, ATROPHIC GASTRITIS, AND THE VAGUS NERVE

The author had previously noted that the intravenous administration of reconstituted gastric juice suppressed hydrochloric acid secretion and produced atrophy of

the dog gastric mucosa. However mucosal atrophy did not take place in the isolated, denervated (Heidenhain) pouch. To explain this discrepancy experiments were performed on three groups of dogs. Animals in the first group were subjected to complete transthoracic vagotomy. The second group had surgical separation of a large portion of the fundus which was then resutured in its normal position. This created a denervated pouch which was in continuity with the remaining stomach. Animals in the third group served as controls. All animals received bi-weekly injections of reconstituted gastric juice and underwent gastric biopsies after eight and sixteen weeks. All control animals exhibited marked atrophy of the gastric mucosa. Vagotomized animals failed to show any demonstrable mucosal atrophy. In those animals which underwent replantation of a denervated fundic pouch, gastric mucosal atrophy was demonstrable in both the intact fundus and the denervated fundus in continuity. Consequently, although vagotomy prevents the development of gastric atrophy in these animals, vagus denervated gastric mucosa in continuity with normal stomach is still subject to atrophic changes. Further work is in progress to determine the significance of this observation.

Role of Vagus Nerve in Experimental Production of Atrophic Gastritis. Merlin K. DuVal, Jr. *American Surgeon* 29: 183-185 (March) 1963.

GAS IN INFANTS

Roentgen investigations of the normal newborn's abdomen have shown that an air bubble appears in the stomach immediately after birth. After thirty minutes, gas is seen in the small bowel. By one hour the swallowed gas reaches the distal small bowel and at two hours the colon is filled with gas. A deficiency or absence of gastro-intestinal gas in infancy is usually due to an obstruction. However, there are certain clinical conditions in which a gasless abdomen is of non-obstructive type.* In infants with respiratory distress or brain damage the lack of gas in the intestinal tract is probably due to feebleness and inability to swallow air. Infants with gastroenteritis may exhibit a gasless abdomen, probably due to collapse of the lumen of dehydrated intestine. A case is presented in which the presence of a gastrostomy is accompanied by a gasless abdomen. This is probably due to lack of air swallowing during feeding and the venting of the stomach gas bubble by a large tube.

*Nonobstructive Intestinal Gas Deficiency in Infants. H. Taybi, W. R. Richardson. *American Surgeon* 29: 233, 1963.

Abdominal Aortic Aneurysm

DAVID D. SNYDER, M.D.*

ALTHOUGH abdominal aortic aneurysm is a fairly common disease, the physician is frequently hesitant to recommend surgery for this disorder. It is understandable that most physicians lack enthusiasm for an operation the magnitude of abdominal aortic aneurysmectomy in an asymptomatic patient, particularly an elderly person with some cardiac or respiratory impairment.

Nevertheless abdominal aortic aneurysm is a lethal disease. Fifty per cent of patients with diagnosed aortic aneurysms die within two years, the great majority from rupture of the aneurysm. Ninety per cent of the patients with diagnosed aortic aneurysms will be dead in five years. An increase in size of the aneurysm and abdominal pain are extremely ominous prognostic signs. The salvage rate of patients with ruptured aneurysms is reciprocally related to the interval between rupture and operation, but in general is poor.

The problems of surgery in these patients are many, but by no means insoluble. In the past two years three major problems which were formerly frequently lethal have been solved. The first of these is hemorrhage through the knitted prosthetic graft. In the past this was frequently troublesome and occasionally exsanguinating. Many techniques of pre-clotting have been tried in the laboratory and that of "stretching and drying" has proved to be the most effective. The clinical application of this technique has eliminated any hemorrhage through prosthetic grafts since its institution. A second problem—one almost invariably encountered—is that of declamping hypotension. The mechanisms and a solution to this problem have been investigated and it has been found that when aortic flow is suddenly stopped in

a patient who has not previously developed collateral circulation, peripheral flow is markedly reduced and there is tissue hypoxia and accumulation of acid metabolites. This results in capillo-venous pooling. Consequently when the aortic clamp is released after aneurysmectomy and graft replacement, this vast reservoir of dilated small vessels traps large amounts of blood with a relatively small venous return. This in turn leads to diminished venous return to the heart, diminished cardiac output and hypotension. A counter-pressure suit has been developed and used to prevent capillo-venous pooling and no declamping hypotension has been encountered on the patients during aneurysmectomy on which it has been used. A third problem previously encountered has been that of renal shutdown. The use of osmotic diuretics such as Mannitol has reduced this dreaded complication.

Ten years ago 60 per cent of all patients undergoing abdominal aortic aneurysmectomy survived five years. The results of operative treatment of aortic aneurysm have progressively improved during the past decade. The elimination of the above complications will further improve this survival. The prognosis of aortic aneurysm is similar to that of a favorable malignancy. Few physicians would hesitate to recommend surgery for a favorable malignancy except in the most incapacitated of patients. □

A 216 page monograph entitled "Cardiovascular Surgery 1962" has been published by the American Heart Association. The proceedings of the Council on Cardiovascular Surgery, it includes 38 papers presented at the Association's Scientific Sessions last October which reflect the recent strides made in this field. The monographs were originally published as a supplement to the April 1963 issue of "Circulation." It is available for \$3.00 from the Oklahoma State Heart Association, 825 N.E. 13th Street, Oklahoma City, Oklahoma.

*Instructor in Surgery, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

Dean's Message

It is interesting to reflect on the necessity for the "continuing education" of our citizenry in regard to any worthy endeavor. Many of us are aware that an extensive campaign is usually needed to get any noteworthy or forward step under way in our community, but we are less apt to realize that a similar exertion is necessary merely to retain and maintain those accomplishments that have already been achieved, be they on a state or national level.

The University of Oklahoma Medical Center has made every effort to keep its alumni and professional friends informed about their institution for medical education, and the alumni, in turn, have made a studied effort to acquaint the legislature and public officials of this state with the requirements to maintain a program of continued excellence in educating and training doctors of

medicine and other closely related career personnel.

To these alumni and to the physicians and civic leaders, who by their tireless and generous support of the School of Medicine have exhibited appreciation of the true role of a university, the entire staff of the Medical Center extends an expression of sincere gratitude. In the words of Sir William Osler, spoken 70 years ago at the time of the up-building of the McGill Medical School: "The great advances here mean increased teaching facilities, and of a necessity, better equipped graduates, better equipped doctors. Here is the kernel of the whole matter, and it is for that we ask the aid necessary to build large laboratories and large hospitals in which the student may learn the science and art of medicine."

Mark R. Everett

OSMA To File Statement Against "Medicare"

In September, R. R. Hannas, Jr., M.D., Vice-President of the Oklahoma State Medical Association, will deliver the following statement on H.R. 3920 to a member of Oklahoma's Congressional delegation, requesting that it be introduced into the record of the public hearing to be conducted on the bill by the House Ways and Means Committee.

STATEMENT OF
THE OKLAHOMA STATE MEDICAL ASSOCIATION
BEFORE THE
WAYS AND MEANS COMMITTEE
HOUSE OF REPRESENTATIVES

Mr. Chairman and Members of the Committee:

I am R. R. Hannas, Jr., M.D., Vice-President of the Oklahoma State Medical Association. A 1950 graduate of the Harvard Medical School, I am presently in the private practice of medicine and surgery in Sentinel, Oklahoma, where I own and operate a general hospital.

For nine years I have been a member of the association's Board of Trustees, and I am now beginning my third term as chairman of our medical organization's Council on Professional Education. In addition, I am an Instructor in Medicine at the University of Oklahoma School of Medicine, Oklahoma City, and a member of the Board of Directors of Oklahoma Blue Cross.

The following statement concerning H.R. 3920 is presented on behalf of the 2,000 doctors of medicine who comprise the Oklahoma State Medical Association, a non-profit professional corporation founded before statehood in 1905 and dedicated to the promotion of the science and art

of medicine and the betterment of public health.

Positions of policy taken by the association are clearly supported by the vast majority of association members, since such policies are formulated by the Board of Trustees and the House of Delegates, the elected representatives of geographical areas and the physician population, respectively. In the long history of the association, no legislative proposal has been more consistently, universally and vigorously opposed than H.R. 3920, 88th Congress. Our convictions have been strengthened by the support of thousands of non-medical persons throughout Oklahoma.

The health and economic problems associated with growing old are not recent discoveries, having been recognized long ago by medical groups, insurance organizations and previous Congresses. In Oklahoma, a medical assistance program for the aged was inaugurated on June 18, 1957, under the Department of Public Welfare, made possible by the passage of Public Law 84-880.

Working with the Department of Public Welfare, the Oklahoma State Medical Association supported and assisted in the original design of the medical care program of our state, a program aimed at providing high-quality medical, hospital and nursing home care to elderly Oklahomans unable to provide for themselves.

The Kerr-Mills Law, Public Law 86-778, was directed through Congress in 1960 by our own Senator Robert S. Kerr, who sought and received the support and counsel of the Oklahoma State Medical Association in the law's design and development.

Oklahoma was one of the first states in the nation to implement the Kerr-Mills Law (October, 1960), and again the medical association which I represent was in full accord with using state and federal tax funds to help those who are unable to help themselves. Since 1960, our association has cooperated on several occasions in modifying the health care programs to provide improved benefits and to increase the scope of eligible recipients.

For instance, as recently as September, 1962, the House of Delegates endorsed the liberalization of eligibility requirements for "Medical Assistance for the Aged" (MAA) recipients. Whereas the previous permissible income levels of \$1,500 for a single person and \$2,000 for a couple had enabled only 2,363 persons to qualify for MAA benefits in 1962, the extension of the income allowances to \$2,000 and \$3,000, respectively, has approximately doubled the case load in this category of health care assistance.

Not only has the medical association been an active partner in the development of tax-supported health care programs for the needy aged of Oklahoma, but we have also worked closely with voluntary prepayment plans in developing special health insurance programs for senior citizens who are able to budget ahead for their health care needs. For example, in 1959, at the request of a medical association committee established for this purpose, Blue Cross-Blue Shield inaugurated its "Special

60" prepayment program. This plan offers persons over age 60 up to 90 days of general hospital and medical care per year at a cost as low as \$8.80 per month for man and wife. We are at work at the present time to promote a high-benefit major medical insurance plan for senior citizens through a pooling arrangement by commercial health insurance companies.

The progress already accomplished in Oklahoma and the plans-in-progress decry the need for drastic legislation as proposed in H.R. 3920. There are many arguments against the wisdom of H.R. 3920, but in the interest of brevity, the balance of this statement shall be directed toward three specific areas of concern which must be considered upon the merit of each and upon their relationship to each other.

Any legislative proposal should, in our opinion, meet the following tests before receiving any degree of favorable consideration by your Ways and Means Committee:

1. Is the principle sound and well-proven?
2. Is there demonstrated need for the legislation?
3. What will it cost?

The Principle

H.R. 3920 would provide limited health care benefits for everyone in the United States over age 65, regardless of financial status, to be financed through a *compulsory tax* on *all working people* covered by the Social Security Act. It is socialized medicine in its purest sense for nearly 18 million Americans, and it is socialized medicine for *all of our working people* who must pay the bill through higher taxes, yet who have no assurance they will ever receive the benefits of H.R. 3920.

Surely no American can honestly feel that it is fair and just to tax a low-income worker to pay the health care bill of another person of equal or greater means. The principle of providing tax-paid benefits to persons of all economic levels is unsound and unfair, but this principle is embodied in H.R. 3920.

The indiscriminate, widespread application of socialized medicine does

not belong nor is it needed in the American system of economy. We need not pattern our health care system or any other system after those of lesser nations, and such a precedent is recommended by H.R. 3920. The experimentation of other nations in such schemes as H.R. 3920 may well be justified by economic and social conditions indigenous to those nations, but a great nation would not establish a pattern for progress by applying what is at best a shaky principle to dissimilar economic and social conditions!

Finally, the principle contained in H.R. 3920 will not only fail to solve the problem of aged care, but will actually breed greater dependence from all age groups upon the state. Many Americans who are able to budget for their retirement needs will not do so if they are forced to pay for the health care benefits of others. Human nature being what it is, the basic unfairness of H.R. 3920 will soon generate pressure to lower the age requirements so that those paying for the benefits may partake of them. The bill under your consideration, Mr. Chairman, will surely initiate, perpetuate and nurture a regressive system of government medicine!

Principles are embraced in H.R. 3920 which cannot be accepted in good conscience by Americans interested in the caliber of our people and the preservation of our system of democracy. With its passage, a problem which is otherwise being met will be compounded beyond re-

covery, and our nation and its people shall have lost another measure of self-respect.

The Need

Even in the United States, drastic legislation may sometimes be justified in the face of a national emergency, so let us examine the health care status of the aged group in Oklahoma to see if H.R. 3920 may be justified as an emergency action to satisfy a significant unmet need.

Following is a conservatively estimated breakdown of the financial resources of Oklahoma's senior citizens to meet the costs of illness: (See Table at bottom of this page).

EXPLANATION OF STATISTICAL SOURCES

1. From the annual report of the Oklahoma Department of Public Welfare, June 30, 1962.
2. Computed from comparative incidence rates of OAA patients and eligibles as compared to MAA patients and eligibles, using the records of the Oklahoma Department of Public Welfare.
3. Estimate established from information obtained from the Health Insurance Council, the Health Insurance Association of America, the Health Insurance Institute, the Oklahoma Department of Insurance, the Oklahoma Association of Health and Accident Insurers and individual insurance companies. The figure has been adjusted to eliminate duplicity of coverage.
4. From the 1962 report of the Oklahoma Blue Cross-Blue Shield

METHODS OF MEETING HEALTH CARE COSTS IN THE OVER 65 AGE GROUP, OKLAHOMA 1962

Category	Number of Persons	Percentage of Total Aged
1. Old Age Assistance Health Program	86,936	35.0
2. Medical Assistance for the Aged (Kerr-Mills)	23,014	9.3
3. Commercial Health Insurance (All Companies)	51,427	20.7
4. The Blue Cross Plan	44,074	17.7
5. Financially Independent, Uninsured	15,836	5.4
6. Veterans Administration Eligibles (Not Otherwise Protected)	4,516	1.8
7. Institutionalized	1,929	.7
8. Charity	12,440	5.0
9. Unknown	8,659	4.4
Total	248,831	100.0

Plans, adjusted to eliminate duplicity of coverage.

5 and 8. Sample survey of patients 65 years of age and older in 44 Oklahoma Hospitals on March 14, 1962. Figure 5 is also based upon a 1959 random sample of 169 Oklahoma physicians who reported their experiences with the over-65 age group on February 23, 1959.

6. From the Veterans Administration Hospital, Oklahoma City, including 125 Spanish American War Veterans. Adjusted for duplicity of coverage.

7. From the Oklahoma Department of Mental Health and the Oklahoma State Health Department, July, 1963.

Thus, it can be seen that the vast majority of Oklahoma's senior citizens are presently protected against the economic burden of illness, and it is reasonable to assume that many of those in the "unknown" classification are protected through the familial responsibility of their loved ones, a quality of our heritage which should not be disregarded nor abandoned.

When a similar study of our aged population was conducted in 1959, 19.4 per cent fell into the "unknown" classification, and the reduction of this group to 4.4 per cent is a result of the passage of the Kerr-Mills Law and the significant growth in voluntary prepayment coverage for the aged segment of our population.

The evolution of Oklahoma's health care programs for the needy is illustrated below, the figures of which include the extra boost provided to Public Law 84-880 by the passage of Public Law 86-778 in 1960:

OBLIGATIONS INCURRED FOR MEDICAL SERVICES, DEPARTMENT OF PUBLIC WELFARE,

1958-1963	
1958	\$ 5,110,350.60
1959	13,168,574.27
1960	15,553,629.67
1961	17,474,420.93
1962	23,416,163.25
1963	26,822,418.55
Total	\$101,545,557.27

In similar fashion, voluntary prepayment plans have risen to the challenge by increasing their coverage of the over-65 age group, as illustrated in the following Blue Cross experience:

UTILIZATION STUDY FOR OVER-65 AGE GROUP, BLUE CROSS-BLUE SHIELD, 1957-1963

1957	\$ 1,356,022
1958	1,756,809
1959	2,355,478
1960	2,840,973
1961	3,777,679
1962	4,787,274
	<hr/>
	\$16,874,235

There is absolutely no justification for H.R. 3920 in the State of Oklahoma. The Kerr-Mills Law works in meeting the health care needs of those unable to provide for themselves, and voluntary prepayment plans are showing tremendous growth as evidenced by the Blue Cross-Blue Shield report.

Our health care programs, both government and private, are designed to meet the needs of Oklahomans, and Oklahomans are better qualified to determine the scope of such programs than would be a central, Federal agency. The flexibility of the Kerr-Mills Law, coupled with voluntary health insurance, is the most economical way to attain high-quality health care for all, regardless of ability to pay.

The Cost

Based upon the average annual earnings per Oklahoma worker, which is given in the Annual Statistical Supplement of the Social Security Bulletin, 1961, Table 24, the passage of H.R. 3920 would immediately impose new taxes upon Oklahomans in the amount of \$17,000,000 per year.

Our wage earners and self-employed paid \$127,400,000 in 1962 to Social Security, up about \$11,000,000 over 1961. On January 1, 1963, Social Security Taxes were again raised when the first of a series of scheduled tax increases was effective, and others are already planned through 1968 without considering the threatened increase called for in H.R. 3920.

Paradoxically, the \$17,000,000 in new Social Security taxes to be imposed by the passage of H.R. 3920, would come at a time when many members of Congress and the Administration are advocating a reduction in income taxes. In the meantime, Oklahoma's tax share of the \$26,000,000 being spent annually for medical assistance to the needy would continue. Although some of our state funds would probably be diverted to other state government functions, there would be no offsetting reduction in state taxes to compensate for the financial blow of H.R. 3920.

No logical explanation can be given to justify the imposition of \$17,000,000 in new taxes upon Oklahoma wage earners, to pay for health care which is otherwise being provided.

A discussion of cost cannot be concluded without reference to the role deficit spending has played in the economic problems faced today by our elderly population. Were it not for the devaluation of the dollar, brought about largely through deficit spending, many of our senior citizens would now be financially independent rather than wards of the state. The principles and the costs associated with H.R. 3920 will adversely influence this trend in future generations.

Summary

Oklahoma is making great progress in meeting the health care needs of its over-65 population, through existing Federal legislation and the other usual means of financing health care. The problem is not solved, but it is solvable, and without further Federal intervention.

H.R. 3920 is unnecessary in the State of Oklahoma, regardless of the pros and cons of its provisions and costs. However, in respect to the merit of the legislation, suffice to say that it is fraught with ill-conceived principles and predictable monetary waste.

Mr. Chairman and Members of the Committee, the Oklahoma State Medical Association urges that you dismiss H.R. 3920 from any favorable consideration. □

Plans Outlined For Mental Health Survey

The Oklahoma State Health Department, through recent approval of a \$50,000 per year Federal grant, has begun laying the necessary organizational and staff groundwork to conduct a statewide mental health survey.

Officially referred to as Mental Health Planning, the project will run for two years under the present grant. According to the State Health Department, "The needs for more widespread understanding of Oklahoma's mental health problems and for statewide planning for comprehensive mental health services are recognized by principal state officials, by the officers and staffs of significant voluntary agencies and by responsible citizens of the state generally."

The federal government made available to all states, through the National Institute of Mental Health, a division of the Department of Health, Education and Welfare, mental health grants to conduct the mental health planning activities.

A resolution introduced at the last annual meeting of the OSMA House of Delegates, covering the proposed Oklahoma project, was amended in the last paragraph to read—"that the OSMA go on record, approve and offer their full and unqualified support of a mental health survey to be conducted at a local level, preferably with private funds."

Oklahoma's Governor, Henry Bellmon, recently appointed an advisory committee to assist him in approaching the mental health study, particularly in establishing a sound organizational structure. OSMA president, Joe L. Duer, M.D., has been appointed to this committee.

While a complete outline proposal of the organizational structure was submitted as an integral part of the grant application to Washington, the Governor's Advisory Committee may see fit to make needed changes before actual implementation of the planning study. Moreover, the State Health Department has indicated Governor Bellmon plans to exert a

role of leadership in directing the mental health study.

Heading up the full time staff for the project are John D. Griffith, M.D., Mental Health Division Director of the State Health Department, and Mr. Jack V. Boyd, Field Co-ordinator for the planning study. Doctor Griffith is certified by the American Board of Psychiatry and prior to accepting the job, served as director of a psychiatric center in Clarksville, Tennessee. Mr. Boyd previously directed a study project for the Oklahoma Legislative Council. He has also served as Personnel Director for the city of Oklahoma City and is a former Executive Director of the Oklahoma Planning and Resources Board.

A medical advisory committee and a committee composed of representatives from various state agencies have met and advised in the establishment of goals and purposes for Mental Health Planning in Oklahoma. The following are goals established by the two committees:

1. The planning will be comprehensive and will include, but not by way of limitation:

(a) Emotional disorders and mental health problems as seen in the schools.

(b) The emotional and mental health disabilities of the senile.

(c) The emotional and mental conditions often closely related to delinquency.

(d) The emotional, behavioral and mental conditions often closely related to alcoholism and addictions.

2. The planning will establish the groundwork for continuing mental health planning.

3. The planning will develop priorities for short and long range statewide objectives and will identify needs for such new and expanded programs as are determined to be necessary, with emphasis on the strengthening of community based services.

4. The planning will consider community readiness and capability for meeting community mental health needs.

5. The planning will consider both preventive and curative aspects.

6. The planning will consider present services and facilities, including their extent and range; and will identify resources which constitute an identifiable continuum for the prevention and treatment of mental illness.

7. The planning activities themselves are considered valuable without reference to specific increases in funds for mental health purposes.

In addition to the Governor's Advisory Committee, which has been appointed, the Governor will appoint 100 to 120 persons to the Governor's Committee on Mental Health and will designate its chairman.

A planning committee, consisting of the Chairman of the Governor's Committee and seven additional members, will chart the planning course, make assignments to the staff through the Project Director, receive reports and schedule meetings. Moreover, a chairman and members will be appointed by the Chairman of the Governor's Committee to each of four panels or subcommittees (Manpower, Financing, Research and Legal Aspects) and to ten Regional Task Forces.

In view of the resolution adopted by the House of Delegates last May, the OSMA Mental Health Committee is now studying the project to determine the extent of OSMA Participation. □

Members Support Required AMA Dues

The American Medical Association received a vote of confidence from Oklahoma physicians when a recent survey of the OSMA membership indicated that an overwhelming majority favored the present policy of requiring AMA membership as a contingency to state association membership.

A mail referendum indicated that 931 physicians supported the present policy toward AMA dues, while 456 were opposed. The ballot and letter of transmittal were mailed from the

OSMA Executive Office on June 5th, and the results were tabulated as of July 1, 1963.

OSMA's long-standing requirement for AMA membership, dating back to 1950, was put to a test following the 1963 annual meeting of the House of Delegates. The Delegates had approved a resolution from Walter E. Brown, M.D., past-president, which called for the president to conduct the poll and publish the results in the *OSMA Journal*.

The resolution pointed out that Oklahoma is one of fifteen state medical societies to require membership in the AMA, and that frequent discussion of the advisability of the policy warranted an evaluation of statewide sentiment.

In the letter of transmittal which accompanied the ballot card, Joe L. Duer, M.D., OSMA President, pointed out to the respondents that placing AMA membership on a voluntary basis might result in the loss of representation at the national level. State delegates to the AMA are selected on the basis of one delegate, per 1,000 active AMA members, or fraction thereof.

"I wanted the physicians of Oklahoma to fully understand the significance of their votes," Doctor Duer said, "since many of them might not be aware that a large loss in AMA participation could cost us a vote in the AMA policy-making body."

At the present time, Oklahoma has two voting delegates to the American Medical Association, authorized on the basis of having 1,756 active members of the AMA. The OSMA has a total of 1,915 AMA members (including those with applications in process and Honorary-Life members).

Honorary-Life Members of the OSMA, of which there are 120, do not presently count in the computation of Oklahoma's representation in the AMA House of Delegates. However, Doctor Duer and his Executive Committee have recommended to the association's Constitution and By-Laws Committee that amendments be drafted to make this possible.

"Physicians in this distinguished classification of membership are prohibited by the bylaws from holding office," Duer said, "although they are entitled to enjoy all other rights and privileges. The mere fact that they do not have the right to hold office prevents them from being counted in determining the number of Oklahoma delegates to the AMA.

"A slight modification in the bylaws," he added, "will give us about 1,900 AMA members and place us on the borderline of obtaining the necessary number of 2,001 members which will permit us to have a third vote in the AMA House of Delegates." He observed that the OSMA showed a net increase of about 40 members last year, "another encouraging factor in regard to our future AMA representation." □

Board of Trustees' Actions

OSMA's Board of Trustees met July 14, 1963, on call of Joe L. Duer, M.D., President of the association and chairman of the Board.

The principal business item was an appellate hearing on disciplinary action taken by a county medical society against a physician member, which resulted in the Board upholding the county society's decision. The Board's written opinion as the judiciary body of the association has been mailed to the appellant.

Next on the agenda, the Board considered nominations of OSMA members to serve on various state government councils and committees.

The Trustees made the following nominations for appointment to the State Board of Medical Examiners, from which the governor will appoint seven to four year terms:

Marshall O. Hart, M.D., Tulsa; Edgar Young, M.D., El Reno; E. F. Lester, M.D., Oklahoma City; C. E. Northcutt, M.D., Ponca City; Charles J. Roberts, M.D., Enid; Glen L. Berkenbile, M.D., Muskogee; E. K. Norfleet, M.D., Bristow; John M. Moore, M.D., Pauls Valley; Francis A. Da-

vis, M.D., Shawnee; F. Polk Fry, M.D., Frederick; Ray U. Northrip, M.D., Ada; Francis R. First, M.D., Checotah; Ross Deputy, M.D., Clinton; W. A. Matthey, M.D., Lawton; and Eugene Johnson, M.D., Henryetta.

Other nominations for state government appointments included the reappointment of W. K. Haynie, M.D., Durant, to serve on the State Health Department's Hospital Advisory Council for the Hill-Burton Hospital Construction Program. Nominees for two appointments to the State Health Department's Hospital Advisory Council for Licensure were: Leon D. Combs, M.D., Shawnee; Charles E. Wilbanks, M.D., Tulsa; J. William Finch, M.D., Hobart; Roger Reid, M.D., Ardmore; and George T. Ross, M.D., Enid.

For a position on the State Health Department's Advisory Council for Rest Homes, Nursing Homes, and Specialized Homes, the Board nominated: E. K. Norfleet, M.D., Bristow; John W. DeVore, M.D., Oklahoma City; and Cecil R. Stansberry, Jr., M.D., Oklahoma City.

The Public Welfare Department was advised by the Board that three OSMA members were recommended as nominees for one position on the Professional Advisory Committee to the Crippled Children's Program: C. M. Hodgson, M.D., Kingfisher; Burdge F. Green, M.D., Stilwell; and W. R. Cheatwood, M.D., Duncan.

An appointment to the Professional Advisory Committee to the Department of Public Welfare (Kerr-Mills) was covered by the nominations of: Wilkie D. Hoover, M.D., Tulsa; Samuel R. Turner, M.D., Tulsa; and Clinton Gallaher, M.D., Shawnee.

To fill the vacancy on the Board of Trustees caused by the resignation of A. M. Evans, M.D., Perry, the Board approved the appointment of L. H. Becker, M.D., Blackwell, to serve until the next annual meeting of the House of Delegates.

Other Actions

In respect to other agenda items, the Board of Trustees:

- Approved a \$250.00 contribution

to the 1964 Essay Contest of the Governor's Committee on Employment of the Handicapped, for the purpose of paying the travel expenses to the national contest, Washington, D.C., for the teacher of the first place state winner.

- Approved a \$250.00 contribution to the Essay Contest of the Association of American Physicians and Surgeons. Oklahoma members of AAPS, with the help of the woman's auxiliary, will promote the contest locally throughout Oklahoma highschools.

- Heard a report from the association's Public Welfare Committee in which the OSMA's role in the judicious use of Kerr-Mills funds was outlined. Also, a tentative plan to convert the Department of Public Welfare's health care programs to a prepaid insurance plan was received for information and study.

- Approved sponsorship of a Cornell University study of automobile and truck injuries in Oklahoma, the findings of which will be used to improve safety features in automotive design. The study will begin in January, 1964, and further information will be supplied to physicians by mail.

- Disapproved proposed new regulations governing the reporting of communicable diseases to the State Health Department. The plan was to have been submitted to the State Board of Health upon approval from the OSMA.

- Approved, with modifications, the State Health Department's implementation of the Federal Vaccination Assistance Act. Under the program approved by Congress last year, Federal funds will be used for immunization education, epidemiology, communicable disease surveillance, immunization status surveys and for certain diagnostic procedures, particularly for polio and diphtheria. However, the Trustees objected to another phase of the Federal plan which would have provided free vaccines for public immunization programs.

- Endorsed the creation of an OSMA Committee on Medicine and Religion.

- Reaffirmed the OSMA's position of not paying honorariums for annual meeting guest speakers. □

Medical-Health Problems of Disaster

In time of a national disaster, American families must be prepared to be on their own for a period ranging from hours to weeks. If they are to survive, it will be mandatory for them to be self-sufficient, particularly in matters where life and health are involved. They may be totally deprived of a physician's services, as well as the services of other health personnel due either to isolation within their own homes or shelter, or to a demand for health services so overwhelming that available health personnel will be inadequate.

How The Medical Self-Help Program Was Developed

Cognizant of all these human elements of disaster, the American Medical Association's Report on National Emergency Medical Care (1959) recognized the probability that in an emergency, demands for medical services would far exceed the number to whom the physician could provide direct care, and recommended that "the general public receive training and become proficient in the application of first-aid and self-aid procedures."

The Medical Self-Help Training Program contains the basic information a person needs in order to preserve life and health in a national emergency. It has been enthusiastically supported by many professional and voluntary organizations. In the present period of world tension, instruction of the lay public in the rudiments of survival principles is essential.

Underlying the Medical Self-Help Training concept is the philosophy that "Knowledge Replaces Fear." A person who knows what to do when faced with disaster will act rationally and effectively. One who is unlearned and fearful will react blindly and ineffectually. This training program will teach people confidence in their ability to survive, along with skills to make them self-reliant until they can obtain a physician's service.

Instruction and Program Supervision

Physicians: The key figure in the Medical Self-Help Training Program is the practicing physician.

The physician has an important responsibility in providing the professional leadership so necessary for the successful teaching of the general population. With similar assistance from members of all health professions, it is believed that the goal of training at least one member in each family in self or neighbor care can be met.

Allied Medical and Lay Personnel: To assist the physician and to do the actual instruction in most cases, the wholehearted support of the allied health worker and individuals with previous experience in this type of teaching is necessary.

It is recognized, however, that the disparity between numbers of individuals to be trained and the number of professional instructors available will require, in some cases, selection of well-motivated individuals without extensive background experience in training. For this reason, the training kits are designed to be self-directing in terms of methods and content.

Who Is To Be Trained?

Everyone capable of learning a few fundamental techniques can be taught the measures needed to save life following disaster. The course is designed so that a wide range of persons can understand it readily. Yet, even those with an advanced education or with considerable first-aid experience should benefit a good deal from the instruction. In other words, the course is aimed at reaching the broadest possible general audience.

A training kit has been developed which contains everything needed for instruction: Instructor's Guide, Film Strip Projector and Screen, Student Handbooks and Test Forms, Printed Lessons with Illustrative Film Strips and Reference Manual, "Family Guide—Emergency Health Care."

The training course consists of eleven lessons. The subjects are:

- 1) Radioactive Fallout and Shelter
- 2) Healthful Living in an Emergency
- 3) Shock
- 4) Bleeding and Bandaging
- 5) Artificial Respiration
- 6) Fractures and Splinting
- 7) Transportation of the Injured
- 8) Burns
- 9) Nursing Care of the Sick and Injured
- 10) Infant and Child Care
- 11) Emergency Childbirth

Training kits and materials or further information may be obtained by writing to: Office of Civil Defense, State Department of Health, 3400 North Eastern, Oklahoma City 5, Oklahoma, or contact your local county health department. □

OC Clinical Meeting Planned

The Oklahoma City Clinical Society will open its Thirty-Third Annual three-day conference at the Sheraton-Oklahoma Hotel on October 28, 1963.

An outstanding program of post-graduate teaching has been arranged. Lectures and discussions by fifteen distinguished speakers selected from various medical and teaching centers throughout the United States will be featured. In addition to the general assemblies, there will be specialty lectures, informal coffee conferences, clinical pathologic conferences and roundtable luncheon meetings each day of the meeting.

Among outstanding lecturers this year will be Charles A. Berry, M.D., from the National Aeronautics and Space Administration in Houston, Texas, who is chief physician to the Astronauts, and Albert Schwichtenberg, M.D., head of the Department of Aerospace Medicine and Bioastronautics, Lovelace Foundation, Albuquerque, New Mexico.

A social hour on Monday evening will be followed by specialty group dinners. Tuesday evening the annual banquet will be highlighted by a parade of songs from beloved hit musicals presented by *Doraine and Ellis*.

All physicians who are members of their county medical societies are urged to attend this meeting.

Rheumatism Society

The Oklahoma Rheumatism Society will hold a meeting in connection with the Oklahoma City Clinical Society on Sunday, October 27, 1963, in the Del Pronto Room of the Sheraton Hotel from 9:30 a.m. to 4:30 p.m.

The morning session will include a short business meeting and guest speaker, Doctor Glenn Clark from the University of Tennessee, will discuss "Baastrup Abnormality of the Spine."

The afternoon session will include a panel discussion on Arthritis and Surgery and a question and answer period. □

DEATHS

ROBERT L. TAYLOR, M.D.
1914-1963

Oklahoma City internist, Robert L. Taylor, M.D., died July 11, 1963.

Doctor Taylor was born in Clarita, Oklahoma, May 1, 1914 and graduated from the University of Oklahoma School of Medicine in 1942. Following four years military service, he established his private practice in Oklahoma City in 1947.

FRED L. PATTERSON, SR., M.D.
1886-1963

Retired, EENT specialist, Fred L. Patterson, Sr., M.D., died June 20, 1963 in Duncan.

Born at Union Star, Missouri, Doctor Patterson graduated from Answorth Central Medical School, St. Joseph, Missouri. He first established his practice in Fargo, Oklahoma in 1908. After serving with the Army Medical Corps in World War I, he opened offices in Woodward, moving to Carnegie in 1934. From 1954 to 1962 when he retired, Doctor Patterson practiced in Duncan.

Doctor Patterson had received dual honors from the Oklahoma State Medical Association. In 1956, he received a 50-Year-Pin and this year, he was awarded an Honorary-Life Membership in appreciation of his

long years of service to the medical profession.

DEAN W. LeMASTER, M.D.
1893-1963

Dean W. LeMaster, M.D., retired Tulsa physician, died in Oklahoma City, June 19, 1963.

A native Texan, Doctor LeMaster was a graduate of the University of Oklahoma School of Medicine. He practiced in Tulsa from 1925 until his retirement in 1951 when he moved to the Purcell area.

Purcell named Doctor LeMaster "Citizen of the Year" in 1962.

Expressing the gratitude of the profession for his years of devotion to medicine, the Oklahoma State Medical Association presented him with Life Membership in 1951.

CHARLES DONOVAN TOOL, M.D.
1902-1963

Charles Donovan Tool, M.D., 61-year-old retired pathologist, died in Idaho Springs, Colorado, July 9, 1963.

A native of Edmond, Oklahoma, Doctor Tool graduated from the University of Oklahoma School of Medicine in 1931. After nine years of private practice in Edmond, he joined the Army Medical Corps in 1942. Following World War II, he became a member of the faculty of the OU Medical School and later was affiliated with the Veterans Administration Hospital from which he retired in 1960.

DUKE G. DIVINE, M.D.
1885-1963

Duke G. Divine, M.D., Wagoner physician who had practiced almost 50 years, died in Wagoner, June 26, 1963.

Doctor Divine, who was a native of Lamar, Missouri, graduated from the University Medical College of Kansas City in 1913. After several years of practice in Appleton, Missouri and Topeka, Kansas, he moved to Wagoner in 1937. He was a veteran of World War I, having served as a transport surgeon assigned to the British Expeditionary Force.

Doctor Divine established the first Wagoner County Health Department in 1948.

BOOK REVIEWS

POINTS ON PREGNANCY by Thomas C. Points, M.D., Esteem Associates Inc., Stillwater, Oklahoma, 1963, pp. 196, \$5.00.

This beautifully written volume for "parents in the making" covers the subject of pregnancy from its beginning to the return home of mother and baby. Medically accurate but couched in language that laymen can understand, this is an authoritative, common sense handbook that will smooth the course of any pregnancy especially for young couples with their first baby. The wealth of modern facts and lucid explanations are presented in a style reminiscent of the old family doctor with touches of sly humor that make good reading even for a father-to-be.

There are chapters on physiologic changes during pregnancy, physical examination, laboratory tests, weight problems, exercise, miscarriage, clothing, cosmetics, danger signals and many other items which patients need to understand or would like to know. In addition there are worthwhile comments on the social, marital and environmental adjustments that must be made with the arrival of a new baby. These are things that all prospective parents should be told but only a few doctors have the talent to present it so well. Like some classic handbooks for diabetics or heart patients, this work fulfills a real need by helping patients help themselves.

The information presented in *Points on Pregnancy* should save thousands of telephone calls and countless physician man hours while contributing to happier, more cooperative patients.—C. B. Dawson, M.D. □

INTERHEMISPHERIC RELATIONS AND CEREBRAL DOMINANCE, edited by Vernon B. Mountcastle. Johns Hopkins Press, Baltimore 18, Maryland, 1962, pp. 294.

Those mindful of "recent trends" cannot overlook the current congestion of the scientific book traffic by

the proceedings of dozens and dozens of symposia. They are said to serve the purpose of affording the speakers opportunities for free interchange of opinions. Yet, in a large number of these symposia, for which American scientists appear to have cornered much of the market, there is no apparent free interchange, and the discussors often use their allotted time for the presentation of their own, frequently quite unrelated, work. In another type of symposium, the editor is so anxious "to preserve the spontaneity" of the discussion in the published report that a high level of endurance on the part of the reader for intellectual and physical exertations is required. At any rate, it must surely be easier for an editor to anchor his flock of contributors in front of some suitable recording device, all at one time, than to send monthly pleas, supplications, and threats resulting in the submission of a manuscript six months after publication date. We understand that a "symposium" is literally a drinking party, and suspect that the real interchange of ideas occurs when various types of spirit start flowing. By then, however, the editor has probably already nipped away with his recording device and busied himself editing.

Be that as it may, the present book reports on the proceedings—not of a symposium, happily, but a conference, and as it is reported, it was quite a sober one. Clinicians, psychologists, anatomists, and physiologists met at Johns Hopkins University in 1961, and pondered such weighty problems as "Why do we have two brains?"—to which a variety of answers were supplied. None seemed to make everybody happy, including the suggestion that we really have four brains. This reviewer, toddling along on one mere brain, was temporarily lost in the melee, but revived at reading of the dolphin's enviable position: the dolphin (*tursiops truncatus* Montagu to the uninitiated) can, if he feels so moved, use his vocal cords indepen-

dently, and simultaneously whistle and buzz, a skill otherwise only known to medical students in sight of a pretty secretary. He also (the dolphin) sleeps with only one eye at a time, dutifully rotating the assignment, but—we suspected it—there is a rub: He must wake up to take each breath.

Other, more formidable, chapters in this book deal with the integration of the two cerebral hemispheres, particularly the fascinating experiments of Sperry and co-workers after section of the corpus collosum, and the effects of brain wounds in humans. Considerable time and space is allotted to the differential functions of the two cerebral hemispheres, and to the location of lesions producing disturbances of symbol utilization, i.e. aphasia, apraxia, agnosia, etc. Again, the clash is apparent between those representing the "localizing school," i.e. assigning specific functions to specific parts of the nervous system, and to representatives of the "holistic school," which believes that not the location, but the amount of brain tissue removed is the determining factor in the clinical symptomatology.

This is a fascinating book, and it is recommended to all those interested in the functions of the central nervous system.—Gunter R. Haase, M.D. □

THE TERMINATION OF INTENSIVE PSYCHOTHERAPY, by Marshall Edelson, Springfield, Illinois, Charles C. Thomas, 1963, pp. 84.

This small monograph is an anecdotal reflection of a psychiatrist's concern for both patient and therapist when psychiatric care is being concluded. As such, it is a primer that points to the types of problems which may arise in the doctor-patient relationship during the "weaning" period in various types of patients.

Doctor Edelson's book will be useful to psychiatrists and psychiatric residents. Physicians at large who care for emotional problems, even on

a superficial general practice level will find this book interesting.

The author is to be commended for showing concern for one of the inadequacies of psychiatry and for doing something about it in a constructive manner.—C. G. Gunn, M.D.

A STEREOSCOPIC ATLAS OF HUMAN ANATOMY, Section VII, Lower Extremity and Section VIII, Back, by David L. Bassett, The Williams and Wilkins Company, Baltimore, Maryland, 1963, Section VII in three volumes, \$27.50 and Section VIII in two volumes, \$14.50.

The appearance of the volumes on the back and lower extremity of David L. Bassett's *Atlas of Human Anatomy* marks the completion of this remarkable work.

These last two sections continue the high standards of the previous volumes. The artistically attractive stereoscopic photographs in color on kodachrome of step-by-step dissections allow one to study at leisure the anatomy of each region. The series includes excellent reproductions of the skeleton, stereoscopic roentgenograms, colored injections of the arterial and venous systems, roentgenographic demonstrations of arterial distribution by means of angiograms, cross-sections and demonstrations of joints and ligaments. All these and other more routine dissections attest to the completeness of the material covered.

The reels which are to be studied by a View Master Stereoscope are accompanied by explanatory notes, line drawings and legends which allow even the uninitiated to identify structures demonstrated on the photographs. The pictures can also be projected and viewed stereoscopically on a screen by use of polaroid glasses.

In its beauty, accuracy, and completeness the series represents a new approach to the study of gross anatomy which might well be utilized by physicians in training and practice, students and instructors. Candidates for board examinations will find this Atlas particularly helpful for purposes of review.—Ernest Lachman, M.D. □

Miscellaneous Advertisements

WANTED general practitioner or internist for group practice opportunity in expanding community. Write Administrator, The Chickasha Clinic, Box 1069, Chickasha for complete details. Inquiries kept confidential.

WANTED certified or board eligible internist to join four certified internists in well-rounded clinic group. Contact Gelvin-Haughey Clinic, Concordia, Kansas.

COMPLETELY equipped clinic building for sale or lease in Atoka, Oklahoma. Central heating and air-conditioning. 2,700 square feet. Available July 1, 1963. Call or write Mark Mills, R.R. 2, Durant. WA 4-0503.

LOOKING FOR a G.P., or an M.D., not averse to doing G.P., as a Locum Tenens for two or three months between now and January, while I am on short term medical mission service. Will furnish comfortable home and office, rent free, and will give all net proceeds from practice. Ideal situation for man finishing residency and awaiting assignment to service. May be able to adjust time to suit applicant's situation. Contact A. C. Hirshfield, M.D., 908 N.E. 50th Street, Oklahoma City 5, Oklahoma.

SOLO G.P. needs G.P. associate. Clinic facilities and hospital available. City of 4,500 with trade area of 10,000, convenient to Oklahoma City and Tulsa. No investment necessary. Salary for six months, percentage thereafter with minimum guarantee, to full partnership. Car furnished. Contact C. E. Woodard, M.D., Drumright. Telephone Area Code 918, Flanders 2-2555.

WANTED: Ophthalmologist or EENT to join six physician group in western Oklahoma. No investment. Guaranteed annual income \$20,000. Contact Alex Shadid, M.D., Community Hospital-Clinic, Elk City, Oklahoma.

OFFICE SPACE for rent, five-room suite, northwest area, Oklahoma City. Share reception room with established practitioner. Excellent opportunity for general practitioner, or specialist. Contact Elmer Rdigeway, Jr., M.D., 3601 North May. WI 3-3344.

GENERAL PRACTITIONER needed in Billings, Oklahoma. Population approximately 600, with large trade territory. Five room doctor's office available. Hospital facilities available at Enid, Perry and Ponca City. Billings is located in rich wheat belt country. Excellent potential for a good M.D. Call or write: Aubrey Tipton, P.O. Box 246, Billings, Oklahoma. Phone RA 5-3424 or RA 5-3284.

PEDIATRICIAN, 1958 graduate of the University of Oklahoma School of Medicine, will be available for private practice July, 1964. Interested in either group or solo practice in any Oklahoma town, 25,000 population or more. Contact Robert T. Dooley, M.D., U.S. Naval Hospital, Jacksonville, Florida.

FOR SALE clinical camera with enlarger. Contact Mrs. Peter E. Russo, VI 3-4953.

FOR SALE: Westinghouse, 500 M A, 150 KV Diagnostic machine. Complete with tables, transformer, control stand, new motor-driven Capri table, six inch amplifier, Nassau spot film device and photo-timer. Will consider any offer. Contact B. E. Mulvey, M.D., R. B. Price, M.D., or C. G. Coin, M.D. Phone CE 5-0511 or CE 6-4501, Oklahoma City.

BIG SAVINGS on "Returned-To New" and surplus equipment. Reconditioned, refinished, guaranteed, X-Ray, examining tables, autoclaves, ultrasonics, diathermies, or tables, or lights, and more. Largest stock in the Southwest. WANTED: Used Equipment. TeX-RAY Co., 3305 Bryan, Dallas. (Open to the profession Wednesdays, Thursdays, 9-5. Other hours by arrangement.)

Physical Diagnosis and the Fabrication of Physicians

MOST STUDENTS on entering medical school plan to become practicing physicians—even those who will subsequently realign the direction of their careers toward teaching or research. This initial intention of medical practice provides an almost unparalleled incentive which can easily be capitalized upon in the teaching of physical diagnosis. This same desire also makes this a propitious time in which to reinforce the idealism of the student with regard to the responsibilities of his chosen profession, and indeed to begin to cultivate within him the proper sense of *noblesse oblige*. The primary objective is, of course, to teach the principles and techniques of physical diagnosis *per se*, but by doing as much of this as possible in a clinical setting, we try to nurture these other aims as well.

In most curricula, the freshman year of medical school consists of an intensive saturation with the basic sciences whose significant relationships to clinical medicine are but dimly perceived by the average student. He knows that he must accept and successfully manage this material, but its very volume and complexity often frustrates and disheartens him. If then in the sophomore year he is given an opportunity to assume the role of a physician—at least in part—his reaction is not unlike that of a traveler lost in a desert who has just discovered an oasis.

The curriculum at Oklahoma is presently organized on the “quarter system” with ten weeks allotted to each quarter. Physical Diagnosis is presented during the first three quarters of the academic year, and we have utilized these periods as arbitrary division points in the course. Our attitude is sufficiently traditionalist that we believe there is still a deserved place for the prepared lecture, and apart from several practice sessions, the first ten weeks are largely devoted to a didactic review of the subject. Liberal use is made of visual aids in the form of slides and motion pictures, and amplifying sound systems are also employed to demonstrate various auscultatory and percussion findings. The direct presentation of patients to the entire class has been largely aban-

doned; for while there is no question of a great interest and enthusiasm on the part of the students toward such presentations, the direct benefits accrue mainly to those in the first few rows. The remainder of the class is too far removed from the patient.

The first ten weeks section closes with an informal talk on medical ethics—the responsibility of a physician to his patient, his profession and the community at large. This is given by one of the members of our faculty in practice, and he allows about a half-hour at the close for discussion generated by the students. Many of the questions directly reflect the anxieties of the student as he pictures himself in the forthcoming ward work. “Is it all right to tell a patient what’s wrong with him?” is a question which is repeated every year. “What do I do if I think the ward physician is wrong about something?” “What should I say if the patient asks me what medicine he is getting?”

Some situations a little more distantly removed also come up for discussion. “Should a physician actively engage in politics?” “Do you have to look after a patient who won’t pay you?” “If a patient has a venereal disease, are you supposed to warn his wife?”

“Should you tell a patient with cancer the true nature of his disease?” “Is a physician ever justified in withholding treatment from a patient; that is, can you leave him alone to die in peace?” We regard the appearance of these queries as good symptoms, indicating that the student is trying to ascertain his responsibilities as he tries on the Aesculapian mantle. During the several years we have presented it, this session has been one of the best-received in the course.

We have confined the “skin-painting” of anatomical reference lines and outlines of interior viscera to one or two of the practice sessions; it is our conviction that once the student has refreshed his memory of topographical anatomy he will develop his skills and learn much more rapidly if we move him into the clinical setting. Therefore we send him to the wards to learn from patients at first hand.

The student who is about to take on the role of a doctor and confront his first patient sweats, trembles, shakes, and becomes alternately hot and cold. I suspect that most of us recall our own primary exposure with a premature systole! In an effort to detoxicate this first encounter, we have members of our house staff take groups of four to six students on ward walks for the first afternoon of the second ten weeks. Each group visits about a half-dozen patients under the wing of a resident who introduces them, tells them briefly of the patient's illness, demonstrates the physical signs, and—most important of all—has the students palpate, percuss, and auscult the patient themselves. This initial bodily contact, so portentous to most students, is thus drained of its horrific quality. They have the opportunity to note that the relationship between a successful doctor and his patient is a friendly one based on mutual respect, the patient respecting the physician for his understanding and professional competence, and the doctor respecting the feelings of his patient. They see how the hostile patient can be managed and the anxious one reassured. They begin to appreciate the necessity of capturing the patient's confidence if questioning is to be successful, and that seemingly trifling bits of information can be developed into important facts.

Following the ward walk, they begin work with their preceptors. Each student is asked to choose a partner who will work with him on the wards, and each such team is assigned to an individual preceptor for two five-week periods. Although the students alternate the role of historian and examiner, each is held responsible for knowledge of the content of the other's work. Each student team is assigned to a patient to "work up" and they are allowed an hour and a half for this task. At the end of this time, they meet with their preceptor at the bedside to present an abbreviated review of the history and to demonstrate their physical findings. The preceptor then may question the patient further, check the disclosures of the examination, and point out the relationships of the various factors which indicate whatever pathologic state may be present. Afterward, each student is expected to prepare a complete write-

up of the history and physical examination. This is reviewed by the preceptor concerned and returned at the next session.

Concurrent with the ward work, smaller groups of six to 12 students receive individual instruction in particular areas of examination which seem to be especially difficult for them. Six students who spend the afternoon making rounds on a dermatologic ward can be readily taught to recognize and correctly describe the basic kinds of skin lesions; a handful of students under the direction of an ophthalmologist can also be quickly taught how to handle the ophthalmoscope and to perform an adequate eye examination. The same principle holds true for learning to examine the heart, the ears, nose and throat, the nervous system, and for obtaining a pediatric history. By farming out small groups of students for such concentrated instruction and practice, we have been able to assist them over these particularly difficult hurdles.

We have sought after and secured a gratifying support of this program from our part-time faculty. By and large, they have a somewhat different approach to dealing with patients than do the full-time men who frequently can spend only small portions of their day with patients, and then usually in the character of an investigator or consultant-teacher rather than that of a "treating doctor." Both types of teachers have a special contribution to make, and we try to have all students receive a preceptor from each category. The full-time men are grateful for this assistance, and the part-time faculty seem to enjoy this informal type of teaching. A not insignificant bonus is the development of contacts between the two groups as they meet in the wards and when they compare notes on their students. Significantly, our "town-and-gown" relationships are pleasantly cordial.

Osler's concept of medicine as "an art based on science" is a perceptive one, and like the other arts, medicine is best taught by example. If the student is in close association with his preceptor in a clinical setting, the transference of skills is catalyzed. We can then try to teach not only the science of physical diagnosis, but also some of the art of medicine, and foster the development of those characteristics which mark the good physician.—*David C. Mock, Jr., M.D.* □

By way of an "interim report" I am very happy to be able to say that the "affairs of state" are progressing very well. All credit must go to our very fine Council and Committee chairmen, who are all hard at work and well on their way to getting some important things done for the association. I would be derelict not to recognize their very wonderful co-operation and energetic and time consuming work.

Doctor Rex Kenyon, Chairman of the Council on Public Policy, is working hard at getting the Operation Hometown on the road, and making arrangements for the Conference of County Officers, as well as making progress on the other items that fall to his Council.

Doctor Dave Lhevine, Chairman of the Council on Insurance, has his Council organized and is putting forth every effort to help us in our various insurance problems.

Doctor R. R. Hannas, Chairman of the Council on Professional Education, is doing his usual fine job of getting his Council activities under way. Plans are well along for the post-graduate courses, as well as for the annual meeting next May.

Doctor E. M. Gullatt, Chairman of the Council on Socio-Economic Activities, has some of the toughest problems in our association, at which he is working most diligently. This Council, with its Committee on Public Welfare, is due enormous credit for the time and effort that is being expended in our behalf. You have all heard from him. His messages are important. Heed them!

Doctor Hayden Donahue, Chairman of the Council on Public Health, has an active Council, well organized, and going at full speed. Under his Council, the Committee on Mental Health, with Doctor George Guthrey as chairman, is working hard to formulate plans for a State Congress on Mental Health. The public interest in these problems offers unlimited possibilities for our association. You should be aware that a statewide survey on Mental Health will be conducted under the auspices of the State Department of Health, under the leadership of Doctor Griffith. You will be asked for participation which I hope each of you will give whole-heartedly. Our work in this field will be of great importance.

The Committee on Constitution and By-laws, under the guidance of Doctor Ray Stacy, is active in a study for some very important and necessary revisions.

The Grievance Committee, with Doctor E. C. Mohler, as chairman, is laboring under an increased load. This is an item that should be of utmost importance to every member of the association.

A new committee, authorized by the Board of Trustees, is a Committee on Medicine and Religion. It is taking shape with Doctor Allen Greer as chairman. I feel that this committee has great potential for good for the profession and our patients, and its work needs to be promoted with all our strength.

This month will see the start of District meetings in each Trustee District by myself and staff. I hope to be able to bring to each physician some of the facts about our organization and their direct application to each district, that will help to bring about better understandings and better solutions to many of our most pressing problems. I shall be looking forward with pleasure to seeing as many of you as possible.

With all thanks to a real fine bunch of workers, the Chairmen, the members of the Councils and Committees, and the office personnel, it is a distinct pleasure to report progress in our undertakings. With the continued concerted help of each, I am confident that much further progress will be made.

Joe L. Greer, M.D.

Bilateral Primary Wilms Tumors*

Report of a Case

CASE HISTORY

DONALD D. ALBERS, M.D.
HENRY T. RUSSELL, M.D.
RAY F. MOTLEY, M.D.

AFTER NEUROBLASTOMA Wilms tumor is the most common malignancy in children under ten years, and accounts for about 20 per cent of all childhood malignancies.^{1, 2} Early reports indicated that bilateral Wilms tumors occurred rather frequently. Reiser and Creevy found 28 bilateral tumors in 1,170 cases reviewed in 1952.³ Martin and Kloecker reported three cases of bilateral Wilms tumor and made an extensive review of the literature.⁴ However, in many of the reported cases of bilateral Wilms tumor, it could be seriously questioned that they were bilateral primary tumors and many of the reported cases have been considered to have resulted from metastasis from one kidney to the other.³ This case is being reported because there is good evidence that it represents bilateral primary tumors and also to review some of the present concepts of treatment.

A 12-month-old Indian girl was first seen by her physician because of low grade fever and swelling of the abdomen. These symptoms had been present about one week. There was no familial history of heart or kidney disease. Physical examination revealed bilateral abdominal masses, so the patient was hospitalized for more complete evaluation.

The patient appeared to be well nourished and developed but acutely ill. The abdomen was distended by bilateral firm, non-tender abdominal masses easily palpable. No other significant physical findings were present.

Laboratory data on admission were as follows: Hemoglobin 7.0 grams per cent; Hematocrit 26 per cent; White blood count 12,500 with 69 per cent segmented neutrophils, 26 per cent lymphocytes and five per cent monocytes; and approximately five to six platelets per oil immersion field. The urine showed a four plus proteinuria and many red blood cells. The urine cultures grew out a heavy growth of *Proteus* species. An intravenous pyelogram showed no function on the right and hydronephrosis on the left. Retrograde pyelograms (figure 1) showed bilateral hydronephrosis. A roentgenogram

*From Wesley Hospital Foundation, Oklahoma City, Oklahoma.

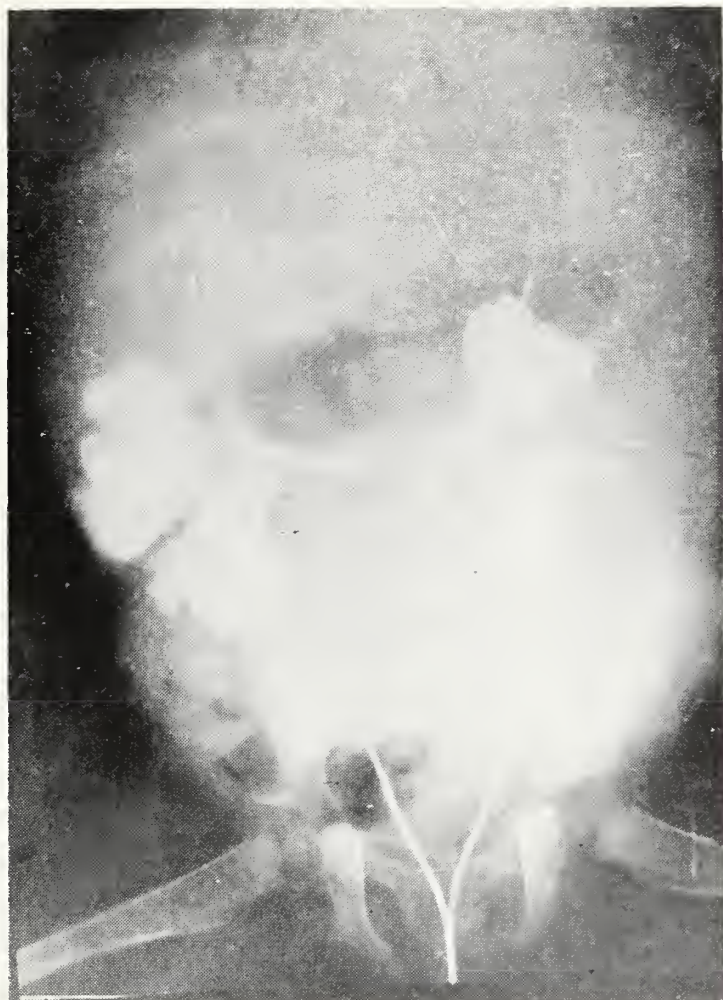


Figure 1. Retrograde pyelogram demonstrating bilateral hydronephrosis with moderate displacement of the kidneys which appear huge.

of the chest showed moderately elevated diaphragms.

Blood transfusions were given. A right renal biopsy was obtained through a short incision in the right flank where the mass was quite superficial.

The tissue was reported as Wilms tumor. The quandary of treating this patient with apparent bilateral Wilms tumor existed, but

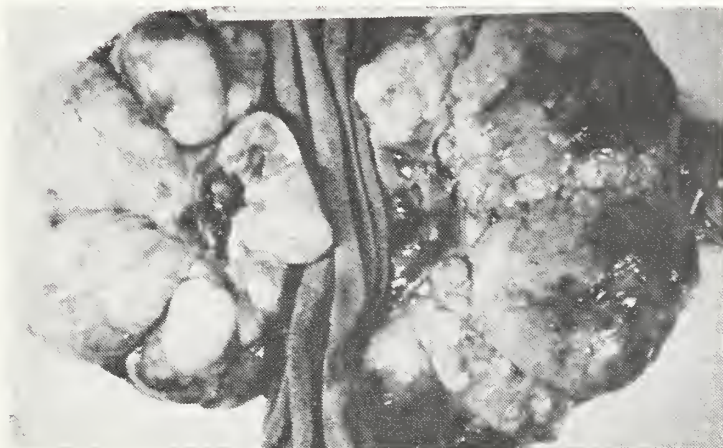


Figure 2. Gross specimen showing light gray bulging cut surface of kidneys and only small amount of normal renal tissue remaining. Vascular attachments were intact in this picture. The towel was needed to help distinguish the separate kidneys.

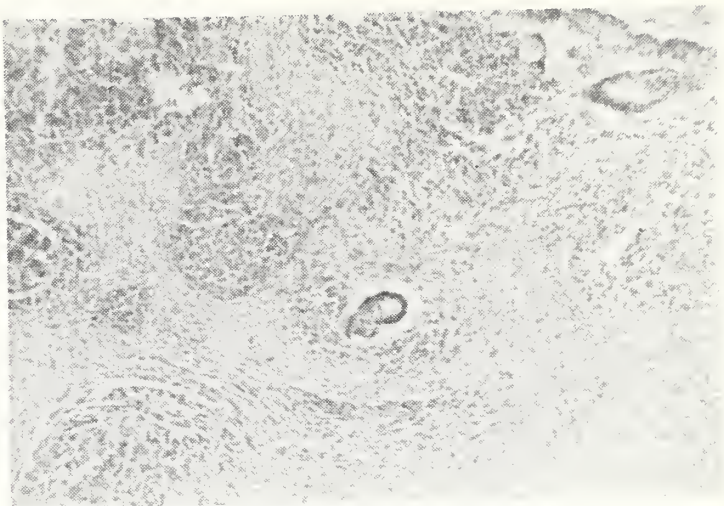


Figure 3. Representative microscopic section from several cut on each tumor x 100.

before definitive therapy could be instituted the child aspirated her feeding, developed atelectasis and expired.

AUTOPSY FINDINGS

At autopsy, partial atelectasis of the left upper and middle lobe of the lung was found. The most significant finding was two large retroperitoneal tumors, each over 12 cm. in length, which almost completely replaced each kidney (figure 2). They were completely separated by normal tissue. Approximately equal involvement of the kidneys was

Donald D. Albers, M.D., a graduate of Northwestern University School of Medicine, has been certified by the American Board of Urology. In addition to his private practice in Oklahoma City, he is Associate Professor of Urology at the University of Oklahoma School of Medicine.

Doctor Alber's professional affiliations include the American Urological Association, the American College of Surgeons and the South Central Section of the American Urological Association.

Since graduating from Washington University School of Medicine in 1947, Henry T. Russell, M.D., has been certified by the American Board of Pathology. He is now with the Department of Pathology at Saint Elizabeth Hospital in Lafayette, Indiana.

A 1959 graduate of the University of Oklahoma School of Medicine, Ray F. Motley, M.D., is now taking a residency in pathology at Saint Anthony Hospital in Oklahoma City.

present. Histologically, these tumors were typical of Wilms tumor (figure 3).

DISCUSSION

An important question is whether bilateral Wilms tumors originate in separate kidneys or have a metastatic relationship. The fairly uniform involvement of each kidney, separated by a large area of uninvolved tissue, and the absence of other metastases support the concept of bilateral origin in this case. Similar evidence for the existence of primary bilaterality was found by Hou and Holman who reported a case in a premature infant.⁵

The treatment of such a case represents practically insurmountable problems. Since the kidneys were almost entirely replaced with diffuse tumor, bilateral partial nephrectomy was impractical. Chemotherapy and radiotherapy would shrink the tumor but with no renal tissue remaining, the chances for success would be nil. Since apparently five per cent of Wilms tumors are bilateral, Martin and Kloecker suggest both kidneys should be carefully inspected at operation even for unilateral disease.⁴ They think the treatment of choice is bilateral heminephrectomy or nephrectomy on one side with excision of the tumor on the other followed by x-ray therapy and systemic chemotherapy. One should be suspicious that a cyst or cystic-appearing kidney contains Wilms tumor. One case has been reported in which the patient was cured by resecting one kidney and giving x-ray therapy to the other.⁶ Other

cures have been reported by nephrectomy on one side and later partial nephrectomy on the other.^{7,8}

It is evident that in the management of the present case, bilateral exploration should have been carried out transabdominally, had the patient's general condition permitted. Many people believe that if one-half of the kidney can be preserved and all of the tumor removed this should be done.⁷ If this could not have been done, the more involved kidney should have been removed and the remaining one (or other) treated by chemotherapy and radiation. The virtues of removing the more involved kidney and treating the other with radiation versus treating them both with radiation could be argued. There are some who would consider renal transplantation in such a case.⁹

SUMMARY

A case with apparent primary bilateral Wilms tumors is presented and some of the approaches to treatment are discussed. □

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Donald D. Albers, M.D.

301 N.W. 12th, Oklahoma City, Oklahoma

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Primary Hypertrophic Pyloric Stenosis in Adults

WILLIAM O. COLEMAN, M.D.

Hypertrophic pyloric stenosis in adults may be persistent from infancy requiring subsequent surgical treatment. The relationship of the abnormal pylorus to other common upper gastrointestinal lesions is discussed.

TWO TYPES of hypertrophic pyloric stenosis occur in the adult: (1) Primary or idiopathic, in which there is no other demonstrable gastro-intestinal lesion and (2) Secondary, in which a concomitant lesion such as peptic ulcer is found.

Primary hypertrophic pyloric stenosis in the adult is still a rare finding; however, reports in the literature appear somewhat more frequently in recent years. The secondary type is not uncommon, occurring with both benign and malignant ulcers and the treatment in these instances varies with the concomitant lesion. Primary hypertrophic pyloric stenosis in the adult (or in the infant) is a benign lesion however, and is readily amenable to surgical correction.

This paper reports an additional case of the primary type of hypertrophic pyloric stenosis in the adult and presents a review

of the literature with emphasis on the surgical management and the relationship of pyloric abnormality to other lesions in this area.

HISTORICAL REVIEW

Fabricus Hildanus is generally credited for the first description of the infantile or congenital hypertrophic pyloric stenosis in 1627. Ravitch's "Story of Pyloric Stenosis"¹⁷ provides an especially descriptive review pointing out the evolution of the surgical therapy from the radical procedures to the Fredt-Ramstedt pyloromyotomy in infants.

Cruveilhier published the autopsy findings on a 72-year-old woman in his *Atlas of Pathological Anatomy* in 1842¹² and other reports of the disease in adults followed. The first report of a surgical cure in adults was in 1904 when Mayo-Robson¹³ performed a gastro-jejunostomy in a 24-year-old patient with good results. By 1950, however, only 59 authentic cases of the primary type in adults could be collected by North and Johnson to which they added five personal cases. In 1962, Christiansen and Grantham³ also reviewed the English literature, collecting an additional 56 cases to which they added two personal cases, making a total of 122 cases reported up to that date. Feraru⁷ reported five cases in 1961 not included in the collection by Christiansen and Grantham.

ETIOLOGY

It is not known whether primary hypertrophic pyloric stenosis in the adult is uniformly of congenital origin or whether it may be acquired. It is, however, natural to assume that hypertrophy in adults represents a persistence of the infantile form because morphologically the lesions are almost identical. It is probable that the disease exists in subclinical form for years before gastric distention, gastritis or ulcer results in clinical symptoms. Persistence of the typical pathological lesion in an infant of 18 months as reported by Trump and Swan²⁰ demonstrates that the clinical symptoms may disappear long before the pathological lesion in the congenital type; and, conversely, other reports show that the pathological lesion disappears promptly in infants after the Fredt-Ramstedt pyloromyotomy²¹ and in adults after pyloroplasty⁵ but that the pyloric tumor remains unchanged following gastrojejunostomy.^{16, 19, 21} Lumsden and Truelove¹¹ performed radiographic studies on 17 patients who had pyloric stenosis in infancy treated medically and who were essentially asymptomatic. Five of these had a marked pre-pyloric narrowing and an elongation. In a similar study by Nielson and Roelsgaard in 1956,¹¹ 45 adult patients who had been treated medically for pyloric stenosis in infancy were fluoroscoped and 35 found to have significant pyloric narrowing and elongation.

It is of interest to consider the role of pyloric hypertrophy and spasm in the pathogenesis and symptomatology of gastritis and peptic ulcer.^{9, 18, 16, 6} The importance of normal pyloric function in hiatus hernia is stressed by Burford¹ who believes that a gastric drainage operation such as pyloroplasty in patients having a short esophagus is more helpful than the repair of the hiatus hernia. Of 45 patients who had been treated medically for hypertrophic pyloric stenosis in infancy, as reported by Neilson and Roelsgaard, 14 (31 per cent) were found to have peptic ulcer. There is experimental evidence supporting the jet stream effect in the etiology of duodenal ulcer² and the persistent pylorospasm and narrowing of the hypertrophic pyloric stenosis reproduces

this effect, especially when accompanied by hypermotility of the stomach.

CLINICAL PICTURE

There is no characteristic clinical picture of primary adult pyloric hypertrophy. Vomiting is the most common finding and was present in 53 of the 59 cases analyzed by North and Johnson and in 34 of the 58 cases studied by Christiansen and Grantham. Some patients have little or no symptoms¹¹ and require no treatment. The symptoms are not typical of ulcer except when this lesion occurs concomitantly or secondarily and physical examination is rarely of value. A palpable abdominal mass was found in four of the cases studied by North and Johnson. Craver⁵ is one of the few subsequent authors to mention the possible presence of a mass but did not report this finding in any of his five cases. Weight loss occurs about half the time even when symptoms of vomiting had been present over a period of many years. Gastric acidity has followed no set pattern.¹⁰

DIAGNOSIS

Surgical intervention is usually indicated by the roentgenographic findings. A pre-operative diagnosis is dependent on a high index of suspicion by a radiologist who has an awareness that such an entity exists plus certain radiographic findings. The most consistent finding is elongation and narrowing of the pyloric canal. In diffuse hypertrophy, the narrow pyloric canal is usually smooth and shows no mucosal alteration. Complete gastric retention is a rare finding in contradistinction to annular carcinoma or stenosing ulcer. These findings also occur, however, in infiltrative neoplasm, pyloric ulcer, encircling myoma, pedunculated tumors and prolapse of gastric mucosa. Laparotomy is usually necessary to rule out malignancy or stenosis due to ulcer.

OPERATIVE FINDINGS

It is not always easy to recognize this lesion at the operating table^{16, 10, 19, 4, 14} and undoubtedly some cases will be indistinguishable from the malignant lesions in this area. When the stomach appears normal external-

ly, the surgeon is obligated to open the prepyloric portion and inspect its interior. Lesser degrees of hypertrophy may be missed unless a finger is inserted into the pylorus. In the secondary type, the concomitant peptic ulceration may distract the surgeon's attention from the pylorus and cause the hypertrophy to be overlooked. The hypertrophy may be marked and typical of the type usually encountered in infants (as in the case presented) or occur as discrete patchy islands in the pylorus even involving the distal stomach.¹⁴ In the more typical case, the consistency varies from that of soft rubber to cartilage. The lesion is fusiform and thickest at the pyloroduodenal junction where the hypertrophy stops abruptly at the pyloric ring. Proximally it thins out gradually over the gastric antrum.

The normal average thickness of the adult pyloric musculature is not entirely established; however, the authentic cases of hypertrophic pyloric stenosis reported usually range above five mm. in thickness. The criteria for establishment of the diagnosis remains more clinical than arithmetical. Detailed studies in necropsy specimens by Wolstenstein²¹ in 1922 demonstrated the normal thickness of the pyloric muscle in infants to range from .5 to 2.5 mm. while the thickness of those with pyloric hypertrophy ranged from three mm. to seven mm.

An incision extending into the first portion of the duodenum, completely opening the pyloric canal, permits extensive examination of the mucosa and reveals a cross section of the hypertrophied muscle. A portion of the latter should be submitted for histologic examination. An immediate frozen section study may help to establish the diagnosis, particularly if there are suspicious nodes present. Hypertrophy is suggested by the regular, concentric or eccentric thickening of the pylorus with a smooth serosa. The appearance and feel of the directly exposed mucosa should reassure one he is not dealing with cancer.

TREATMENT

The events mentioned above leading to the gross surgical diagnosis should not preclude a more conservative treatment such as pyloroplasty, and, if the hypertrophy should prove to be of the secondary type with concomitant

peptic ulceration, the addition of vagotomy may be the procedure of choice.

Many surgical procedures have been utilized for this condition with varying degrees of success. These include digital dilatation of the pylorus, pyloroplasties, gastric resection, gastro-enterostomy, the Fredt-Ramstedt pyloromyotomy and pylorectomy.

Adequate pyloroplasties or gastric resection have proved to be the procedures of choice in primary hypertrophic pyloric stenosis in the adult. A gastric resection has been preferred by many because of the inability to exclude neoplasm. Many of the reported cases of pyloric hypertrophy in the adult are of the secondary type and gastrectomy has been done as definitive treatment for the concomitant peptic ulcer; however, in the primary or idiopathic type an adequate pyloroplasty has been satisfactory.^{3, 16, 7, 10, 19} Christiansen and Grantham, in their collective review, concluded that gastrectomy is preferable to pyloroplasty and cited three poor results out of 16 patients treated by pyloroplasties. These three case reports have been reviewed in detail: McCann and Dean's case¹⁵ had a marked hypertrophy in which the pylorus measured three cm. in thickness and a Balfour pyloroplasty was done with only very temporary relief. This would tend to indicate an inadequate pyloroplasty. This patient had a subsequent gastro-enterostomy for the persistent pyloric obstruction and died shortly thereafter with active tuberculosis. In Greenfield's case,⁸ a "longitudinal incision was made in the pyloric portion of the stomach" (no further description) which very likely could have been a pyloromyotomy inasmuch as the post operative x-ray studies showed "a slightly larger pyloric canal but otherwise no change." This again indicates an inadequate pyloroplasty had been done. Lumsden and Truelove's case¹¹ was a 43-year-old female who, interestingly enough, had congenital pyloric stenosis in infancy which had responded to medical treatment, and her adult illness had not manifested it-

William O. Coleman, M.D., graduated from the University of Oklahoma School of Medicine in 1947 where he is now instructor in surgery. He is in private practice (surgery) in Oklahoma City.

self until she attained the age of 38 years. The type of pyloroplasty done in this case was not specified; however, her symptoms were not relieved and x-ray studies eight months later revealed identical findings to those prior to surgery, again indicating an inadequate pyloroplasty.

Digital dilatation was attempted by Mayo-Robson and Morton¹⁶ without success. Gastrojejunostomy is not recommended because it may not function well in partial pyloric obstruction^{15, 16} and an adequate study of the pyloric tumor is not done. One author¹⁹ in noting the failure of gastrojejunostomy to relieve the symptoms postulated some yet undisclosed disturbance of normal gastric physiology. The Fredt-Ramstedt pyloromyotomy also does not allow adequate study of the lesion, especially the mucosa and pyloric portion of the stomach, and has several potential disadvantages. (1) A large defect may invite formation of a mucosal diverticulum. (2) Inadvertent injury of the mucosa may lead to scarring and subsequent stenosis. Pylorotomy and gastrectomy may be considered together, and, as noted above, are usually done because of the uncertainty of overlooking a neoplasm or because of a concomitant peptic ulcer. When the latter occurs, the morbidity and mortality associated with these lesions may be added to that of hypertrophic pyloric stenosis. If a malignancy is strongly suspected, regional nodes should be included in an en-bloc type of resection at a safe distance from the lesion. The preference between a Bilroth I and Bilroth II type of gastrectomy remains an individual choice; however, both carry a higher mortality and morbidity rate than does pyloroplasty.

A pyloroplasty of either the Finney or Heineke-Mikulicz type is satisfactory. Feraru⁷ in preferring the former noted the difficulty of transverse closure in the presence of the large muscle mass. An adequate incision and careful one layer closure using non-absorbable suture seems to aid in obtaining a satisfactory result in the Heineke-Mikulicz pyloroplasty and vagotomy added for definitive treatment in the presence of duodenal ulcer. In the case presented, a wedge resection of part of the hypertrophied muscle mass seemed to facilitate the trans-

verse closure. The patency of the pylorus in this case was verified by inserting the tips of the index and middle fingers through the lumen by way of the gastrotomy incision.

CASE REPORT

The patient is a 65-year-old white female who was admitted to Baptist Memorial Hospital on December 27, 1962, because of radiographic findings accompanied by complaints of discomfort in the substernal epigastric regions. Indigestion had been noted intermittently over a period of 10 to 15 years but was more severe and persistent in the three months prior to hospitalization. On November 20, 1962, an upper gastro-intestinal series showed a persistent narrowing of the antral canal without definite ulceration. An oral cholecystogram on the same date was negative. A bland ulcer diet was instituted and the patient's symptoms were relieved promptly. A second upper gastro-intestinal series on December 21, 1962, revealed a smooth, elongated and markedly narrowed pyloric canal without ulceration, intraluminal or extraluminal mass (figure 1). A diagnosis of ulcer, neoplasm or hypertrophic pyloric stenosis was suggested. Gastric emptying proceeded at a normal rate.

The patient had no symptoms compatible with infantile hypertrophic pyloric stenosis. The physical examination was within normal limits and no abdominal mass could be palpated. Gastric analysis revealed a free hydrochloric acid of 9.8 degrees with 30 cc. volume and total hydrochloric acid of 27 degrees.

A laparotomy was done through an upper abdominal midline incision and exploration revealed a concentric, diffusely enlarged and thickened pylorus. It grossly presented the typical appearance of hypertrophic pyloric stenosis as seen in infants and had a firm, rubbery consistency. A gastrotomy was performed and a separate longitudinal incision eight cm. to nine cm. in length was made through all layers of the pylorus, extending into the duodenum distally and the antrum proximally. The pyloric canal measured approximately two mm. to three mm. in diameter and would not admit the tip of the fifth finger. The hypertrophied muscle was concentrically thickened, stopping abruptly at the pyloric ring and gradually thinning

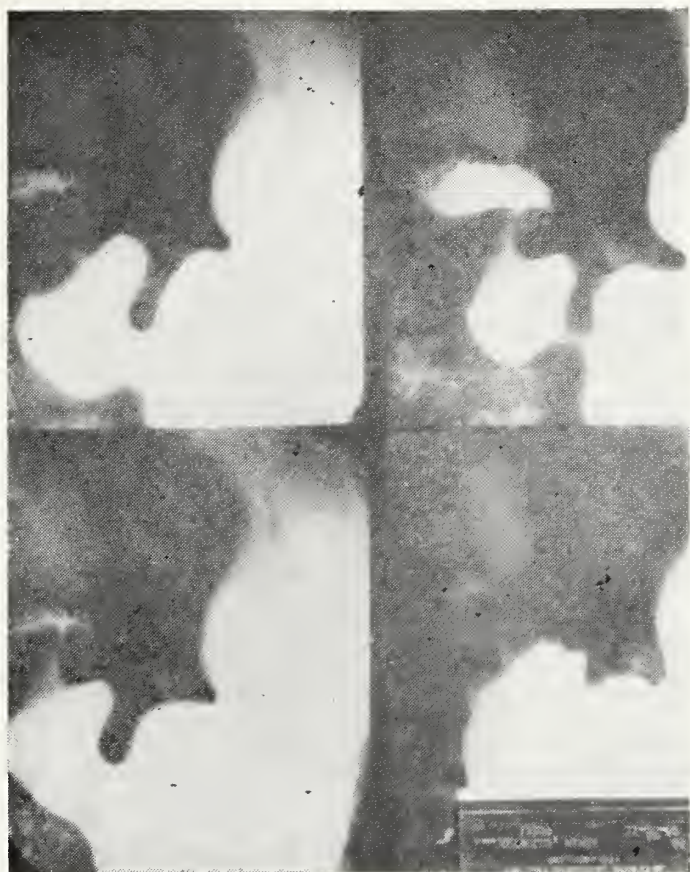


Figure 1. Upper gastro-intestinal series demonstrating marked elongation and narrowing of the pyloric canal.

out over the gastric antrum. It measured approximately one cm. in thickness, 3.5 cm. in length and the serosal and mucosal surfaces were seen to be quite smooth. A wedge of pylorus including serosa, muscle and mucosa was excised and a quick frozen section study was reported as benign. Two additional wedges of hypertrophied muscle were "cored out" to facilitate closure and a Heineke-Mikulicz pyloroplasty was performed utilizing a one layer closure of interrupted silk sutures. The tips of both index and middle fingers were inserted into the gastrotomy incision and through the pylorus to verify its adequacy. No evidence of peptic ulceration was found.

Pyloric function returned within 48 hours following surgery, at which time, the nasogastric Levine tube was removed.

Microscopic sections revealed submucosal chronic inflammation and marked hypertrophy of the muscular element with no suggestion of malignancy. The specimen measured three cms. in greatest dimension.

It seems probable that the symptoms in this case were due to a gastritis secondary to the partially obstructed pylorus. Since surgery, the patient has been asymptomatic with no restriction of diet.

Primary hypertrophic pyloric stenosis in the adult is a benign lesion. The literature has been reviewed and the satisfactory results of adequate pyloroplasty is stressed. Methods of differentiation from neoplasms are discussed and the relationship of pyloric abnormalities to other common upper gastrointestinal lesions is noted. A case of diffuse primary hypertrophic pyloric stenosis in an adult is presented and the striking resemblance of the pathological lesion found to that of the typical infantile lesion is noted. The experiences of others showing the persistence of the lesion in untreated or inadequately treated cases and the significant number (31 per cent) of medically treated cases who subsequently develop peptic ulcer disease is related. Adequate pyloroplasty of either the Finney or Heineke-Mikulicz type as the treatment of choice in primary hypertrophic pyloric stenosis in the adult is suggested. □

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2900 N.W. 67th, Oklahoma City, Oklahoma

ART--A Therapeutic Tool

MRS. MARGARET HOWARD

*"This volcano is how I feel inside—
about to blow up." . . . Art therapy is a
means of expressing pent up feelings
which often times are difficult to
relate verbally.*

ART THERAPY, in the diagnosis and treatment of an emotionally disturbed child, has opened a new window in the school of psychiatric medicine. It is now an important and specialized technique, scientifically devised, in the hands of trained and dedicated therapists. There are results, which raise the hopes of those who see these troubled children daily.

Pictures which I will discuss are those of sick children. They are not to be construed as representative of the pictures drawn by a child in the regular classroom situation. All of us have youngsters who, at a certain age in life, draw battleships and airplanes. This is so normal, that if they did not do it, we would be concerned about their abnormality. But when the child's entire personality is warped to the point where he sees nothing but distortion in one manner or another, this may have definite significance in his treatment program.

Children's drawings fall into three categories, (1) non-representational including

scribbling, string painting, abstractions and symmetrical decorative drawings; (2) representational subject matter including natural objects, people, animals and inanimate nature; (3) fantasy products subdivided into positive, negative and symbolic things.

We are all aware that the use of art forms, particularly color, influences many of our activities. We wear complementary or directly contrasting colors to set off our costumes and enhance our appearance. We also think of color as a means of stimulating us to activity, making our rooms more attractive and enriching our lives.

The effect of color on behavior has been studied by many people. There is still a great deal that we do not understand about color although we are aware of the effect that the primary colors have in stimulating or depressing certain of our activities. We have utilized art therapy under a skilled artist to enrich our knowledge about the underlying emotional problems which are significant to our patients.

Although we are serving an increasing number of children with definitive psychiatric problems, we have utilized the same services with the longer term physically handicapped child. Both have found art an expressive medium for putting many of their dreams and fantasies to work.

In ancient times, red was dominant in many decorating schemes and used as a means of forestalling disease. In Manchuria, red cloth or materials with red in them were supposed to prevent disease. The Russians

used it to cure scarlet fever and the Scots as an aid in relieving sprains. A scarlet cloth was used to stop bleeding and the breath of a red ox was thought to be useful in treating convulsions. Red was recommended for treating paralysis, physical exhaustion and chronic rheumatism. Yellow and orange were prescribed to stimulate the nerves, while blue and violet were used to alleviate sunstroke and cerebral meningitis.

Art can be a "just for fun" recreational activity, or utilized as we have used it, to augment our psychotherapeutic approach to patients.

The interpretation of these pictures must be made in the total framework of the psychiatric problem. Any attempt to come to a diagnostic conclusion on the strength of the picture alone would be purely erroneous. When the pictures are coupled with his case history, including all the known facts about the child, we are able to utilize this valuable diagnostic tool in the evaluation and treatment of his emotional problems.

An art therapist must be constantly aware of the child's attitude, moods, and tension reaction while he draws, whether he is verbal or silent, sad or elated, aggressive, hostile, hyperactive or apathetic. How he relates his feelings about his subconscious thoughts as expressed in art is important.

This case history of a child with selective mutism, illustrates the complexities which can arise in a therapeutic relationship.

This eight-year-old, white male youngster was referred to the hospital by his school for not wanting to talk in school. A tentative diagnosis was made of psychoneurosis, anxiety reaction. At home the child was very talkative. He got along well with siblings and apparently had no problem at all. The family contends that he sleeps well but is afraid of the dark and grinds his teeth in his sleep. The initial onset came about quite suddenly with no first symptoms which were definable. The patient started to talk fluently from the age of two years until a little after four years of age. He, at this time, was talking freely with everybody. Towards the end of his kindergarten year he began to be non-verbal in school. He would sometimes talk to the teacher if the other children were not paying attention. He would not talk to her, or answer questions, if the other children were listening. He talked to the other

children on the playground in a one to one relationship but never as a group.

The mother accounts for this non-verbal attitude from the time that the child received fourteen antirabies shots after having petted a dog. The dog was presumed to be rabid and the youngster received antirabies shots from the nurse. The patient seemed to accept them without difficulty. On one occasion the doctor gave the shot and he reacted very disruptively, screaming and was almost impossible to hold during the administration of the medication. The remaining shots were administered by the nurse without difficulty.

The mother originally coaxed, threatened and finally spanked him for not wanting to talk in school. The patient was admitted to the hospital and scheduled for psychotherapy, occupational therapy, public school within the hospital residence and art therapy.

During the first six months the patient was in treatment in the hospital, his art therapy went through five distinct phases of attitudes. They were passive, fantasy, oedipal anxiety, aggressive and again a passive stage. The following description is the patient's reaction to the art work completed during these phases:

The case history of this eight-year-old boy was interesting in that he found art to be a means of saving face. He could communicate with pictures without having to commit himself in any verbal form. In other departments of the hospital he would be passively resistant to any activities. He seemed to enjoy numbers in school and was working in the third grade level in this area although he did not communicate other than in written form to the teacher.



He was scheduled for daily art therapy. During the first few weeks he would not permit the therapist to touch him as if he feared any sort of personal contact. He revealed this by jerking away when touched on the shoulder and sitting on the edge of the chair as far removed from the therapist as possible. His attitude was constrained

Mrs. Margaret C. Howard, Director of Therapeutic Art at Children's Medical Center in Tulsa since 1956, attended the Chicago Art Institute and studied Psychoanalytical Art at New York University.

and rather sullen. Although he was permitted a wide choice of colors in the first few weeks, he would choose only red or black paper. Tempera was used in the fantasy stage with a wide variety of colors. During the oedipal stage only pencil on white paper was used. The patient would select a soft drawing pencil and the pressure lines were so intense that he would sometimes tear the paper. In the aggressive stage he again used color and was permitted to paint a wall. The mural was a battle scene of death and destruction, red, black and brown predominating.

During the passive stage all drawing was representational, being very unimaginative and crude. They consisted of vases of flowers, trees, pumpkins and witches. Usually apple trees and airplanes were added. More action was noted in the drawings during the oedipal period and towards the end of this period the content became more imaginative. Fantasy stage drawings were quite well executed, colorful, containing a deep sea diver opening a treasure chest on the ocean floor. Another was an old prospector out west digging for gold and a race track driver winning a race. A final picture in this phase was a stagecoach in a western scene with mesa and cactus as a background. The stagecoach was without horses and on the door of the vehicle was the therapist's initials and the patient's entwined in a heart. It was at this time that he moved his chair to the other side of the table to be near the therapist. When she told him good-bye at the end of the session he did not jerk away, even though she placed her hand upon his shoulder. The oedipal phase was dramatized by the locked art room door. This became a ritual when he appeared for his art session. He would lock the door and paint a heart on his hand with their initials within. He would become quite upset if there was any interruption of any kind. He was seeking affection, bringing the therapist a gift made in occupational therapy or a pair of earrings after a weekend visit at his home. If he noticed the therapist displaying any affection or unnecessary attention towards any of the other children, he would refuse to draw in his next session. After an incident in which one of the children presented the therapist with a gift for

her birthday, he ran from the room and did not return for two days. He finally returned when the therapist explained that he was one of her favorite pupils. He threw his arms around the therapist quite violently in an embrace. At this time there had been reports of an upsetting experience with another child on the ward. The day after this incident the patient came into the art room and stood by the therapist's desk for thirty minutes. When the therapist asked if she could help him, he threw his arms around her and began to cry. He seemed to be trying to explain something (possibly it was his anxiety over having been caught in the previous day's fight). He was given a sheet of paper and drew a heart pierced by an arrow. The phrase "I love you" was printed on the inside. After this there were many hearts with initials painted on walls, doors, books, etc. At times he would lock the studio door, turn out the lights and would sit in darkness for some time. Right after this phase was the drawing of two beds with the therapist's initials beneath one and the patient's under the other. He printed in large letters "I love you like Dad." During this phase, he had moved his chair beside the therapist's at the table. The rituals of the locked door, dark room and the therapist's initials ceased as quickly as they began during the anxiety stage. The chair was now back in its original position across the table. He began to draw devils and angels under which he would print "me and you." Some of these drawings were of a little boy being blown away by a tornado, blown up by an explosion or in a plane which was about to crash. There was one of a bird in a cage

Do  like  I love 

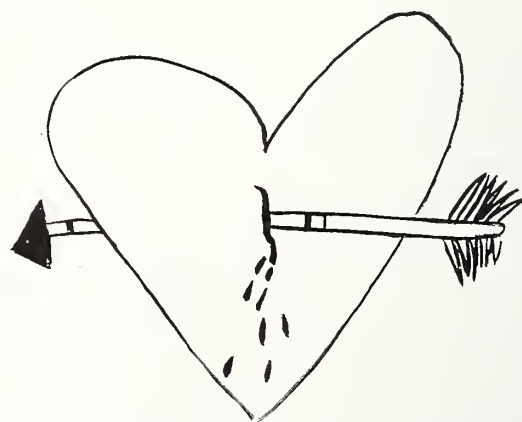


Figure 1. The need for love and affection are apparent but he still sees himself as a devil.

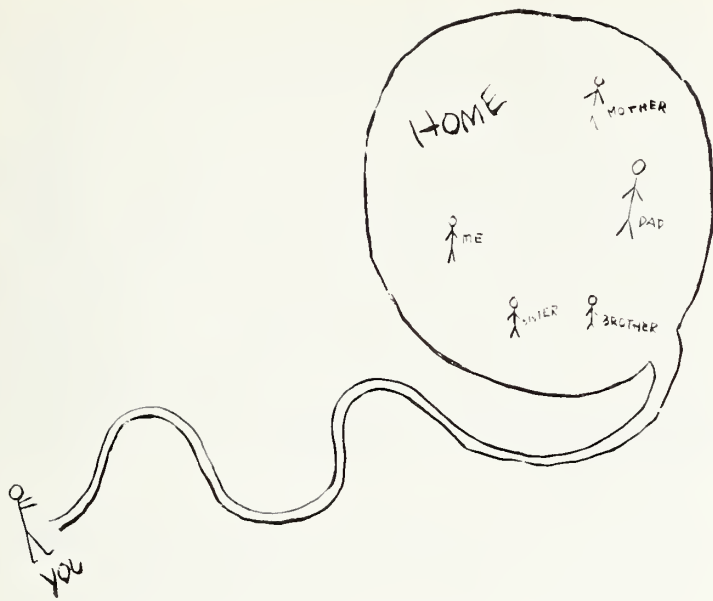


Figure 2. The therapist is getting closer but not yet included in the family constellation of those to whom he speaks.

with a human head. At this time the first of the maze and string circles began to appear.

The circles represented his home and the people he talked to—mother, father, sister, small brother, etc. There was a path leading to the circle with a figure approaching the door. At first the figure was some distance from the door, gradually coming closer to the so-called inner circle. The ward began to report a real aggressive problem of fighting and other destructive behavior. During this time the drawings consisted mainly of battle scenes of death and destruction. The patient became more demanding of the therapist's time, controlling and being ambivalent and very hostile towards other children. He painted a rather large battle scene on the wall. He depicted planes being shot down, cannons firing, bombs exploding, Red Cross workers carrying out wounded soldiers and others digging graves to bury the dead.

Doll house play was introduced at this time, at the suggestion of the psychologist to see if this would be beneficial regarding his over-all behavior. The doll house was set up in the art studio the next day with the dolls representing his family and an additional doll representing the therapist or art teacher. After the first rather mild play, during the first session, the doll representing the art teacher was carefully placed on a shelf and she was no longer included in the violence that went on in the house. The hostility shown during the play situation was indescribable. This tremendous violence went on for the next two weeks. The small brother

(doll) was pushed down the toilet, stepped on and buried in a tomb. The mother was placed in a washing machine and the father doll stepped on, pounded and thrown about the room. In another scene the dolls were placed on the bed and the little boy doll was taken out of his bed and hidden in the closet where the door was ajar. There were many other violent scenes where the little boy killed his sister doll. At one time the patient became so excited in play that he threw the baby doll on the floor and ground it with his heel. He would laugh out loud, almost hysterically, during these activities.

At the beginning of the next week the patient began to lose interest in the doll house and it was finally discontinued. His drawings during this more passive stage became representational and depicted farm scenes and a room full of clocks. His father was quite a good watch repairman. During all of this time no verbal communication had taken place between the child and the therapist. In an attempt to stimulate some verbalization, it was decided to utilize a tape recorder in the studio. He was asked if he would like to play with it after showing him the operational procedure. It was explained that the therapist would leave the room and he could ask questions and she would answer them upon her return by playing the tape. After several attempts he whispered every question, such as, what is your favorite color? and what is your middle name? The boy came to the door and motioned to the therapist to return. He had reached the stage during the third week of the recordings

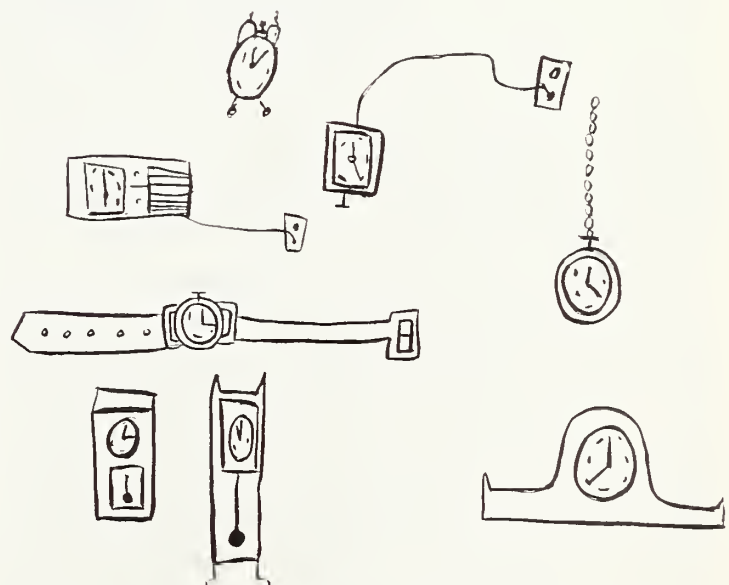


Figure 3. The clocks tell much about his father.

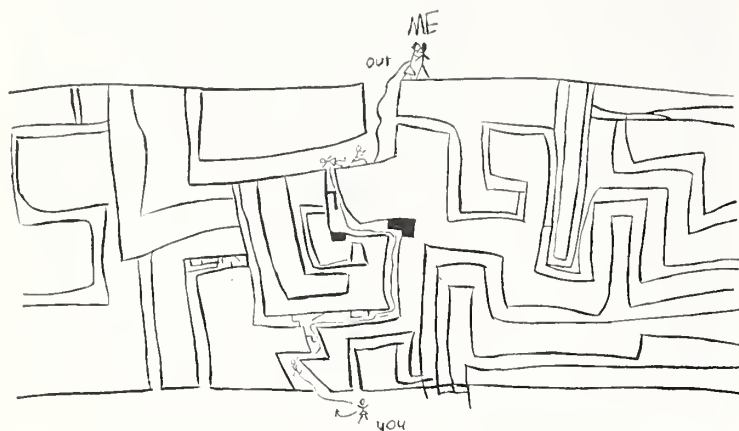


Figure 4. Mazes are special games of hide and seek. He really wants to be found by the therapist.

where he would permit the therapist to remain in the art room as long as she kept her hands over her ears.

During this time the stick figure was now arriving at the door of the circle in his drawings. The family at this time was pressing for discharge of the patient and the patient was finally withdrawn from the hospital against medical advice. Because of the difficult family situation, the patient never returned on an out-patient basis. He is currently attending public school and is still mute.

This child had previously been seen in the Child Guidance Clinic and it was the staff's impression at that time that he had some significant feelings that he was withholding regarding his father and that these influenced his behavior to the n^{th} degree.

The fact that this child was withdrawn from therapy against medical advice leaves us to wonder if many of the hostilities directed towards the father were not in actuality true. The family has refused to allow the child to participate in any type of out-patient therapy either at the Child Guidance Clinic or with other therapists. If intensive therapy could have been continued, we believe that the patient would have been able to verbalize with persons other than his immediate family.

Since the art therapist participates as a member of the treatment team, there is close coordination with the psychotherapist.

Although we have been discussing primarily children with emotional problems, similar activity will assist children in the hospital for medical and surgical procedures to ventilate their feelings and find a therapeutic outlet for their tensions and anxieties.

The case we have chosen presented a dramatic challenge to our staff. Although the child is now carrying on without talking, he will be back with another phase when his problem becomes too overwhelming to both him and his family. We learned a great deal in our experience with this child. We are using the knowledge to help other children in the hospital and in the clinic to find release from their anxieties. Another tool, art therapy, has become a rewarding aid in understanding this patient and all the others who will come within our scope of over-all treatment of the disturbed child. □
4818 S. Lewis, Tulsa 5, Oklahoma

RECIPIENTS NAMED FOR W. B. SAUNDERS COMPANY WRITING FELLOWSHIP AWARD

The extensive and enthusiastic response to the announcement of the Saunders 75th Anniversary Writing Fellowship has resulted in the awarding of two grants instead of the previously announced single award.

So many outstanding applications were received by the selection board from medical scientists of distinguished accomplishment, that an Executive Committee consisting of Robert F. Loeb, Rene J. Dubos, Henry Allen Moe, and Robert S. Morison recommended to the Saunders Company that it mark its anniversary with two equal fellowships, each in the amount of \$15,000.

Saunders accepted this recommendation

and announces that the two recipients chosen by the eminent selection board are Doctor Herman M. Kalckar, of Harvard Medical School, and Doctor Paul B. Beeson, of Yale University School of Medicine.

Doctor Kalckar will be writing on Biological Patterns of Cells in Developmental Defects and Disease States.

Doctor Beeson will be writing on Associations of Specific Infections with Certain Disease States of Man.

Formal presentation of the awards will be made individually to each grantee at two dinners to be held in the Fall and early Winter. □

Safe Procedures in Radiation*

NORMAN SIMON, M.D.

*Genetic damage in future generations
is the only potential hazard in the use of
modern x-ray diagnostic techniques.
Gonads should be spared in young patients.*

IT HAS BEEN customary to consider radiology a new field and to expound its virtues like the bragging about the rapid development of a young child or to decry its dangers like those of an unknown monster. But the use of radiation has matured and much of its danger is known. In medicine its use is more than 65 years old, and, although eligible for social security, it continues to find more and more work. X-ray arrived on the scene as the field of medicine entered a period of scientific advance just before the turn of the twentieth century, just preceding the important changes in American medical education brought on by the Flexner report. Radiation is really contemporary with aspirin and appendicitis. Years before the physician had an automobile available to him, his patients could have x-ray examinations for their broken bones and foreign bodies.

Even in 1901, when McKinley was shot, an x-ray machine was rushed to Buffalo by Thomas Edison to find the elusive bullets.

Almost all drugs now used in modern medicine are newer than radiation, and most are understood much less. It took half a lifetime after the discovery of x-rays for the appearance of most of our present useful drugs including antibiotics and what we call chemotherapeutic agents. Reactions to these newer drugs are not as clearly known as are reactions to radiation.

Just as it has been popular to allude to radiology as a new field, so has it been common to say, "We don't know much about radiation." This may be true insofar as some fundamental mysteries are concerned, but there is a considerable body of knowledge on the effects of radiation built on empirical experience over a period of years and added to by more recent efforts to learn experimentally about ionizing radiation. The ionizing effect of x-rays can be detected and measured at such low intensity that radioactivity and radioactive materials can be studied at concentration levels far lower than we are used to considering in chemical processes.

The early use of x-rays for the diagnosis of disease was limited to the demonstration of dense bone and, later, of the air-filled lung and its adjacent tissues. Visualization of the gastro-intestinal tract was started by the work of Walter Cannon in 1910. Although

*Presented at the Annual Meeting of the Oklahoma State Medical Association, Tulsa, Oklahoma, May, 1963.

still a medical student, he showed by x-ray the path of a bismuth capsule through the gut of a cat. Now this visualization of the gastro-intestinal tract by x-ray has become very common and is the broad base of the entire specialty of gastroenterology. It has made "GI series" a term as well known on Madison Avenue as in the hospital. The entire field of curable intestinal surgery is based on the demonstration of lesions, particularly tumors, on x-ray film. Later the gall bladder fell under the same kind of investigational probing by Graham, and the ills of this organ, too, became diagnosable and then curable. In 1929, a revolutionary method of opacifying the kidneys to x-ray by injecting iodine compounds intravenously was described by Swick.¹ From his technique of intravenous pyelography, there has developed a tremendous field and use for x-ray visualization of other organs, including blood vessels, brain tumors, and the heart itself. Specialties and sub-specialties in medicine and surgery have developed on the wave of diagnostic discoveries with x-ray. The cardiac surgeon is dependent on x-ray for the evaluation of every case, his whole specialty dependent on the development of the technical procedure of opacifying the blood stream to x-rays. The drama of the open-heart surgical operation can often only be staged after sophisticated x-ray examinations of the heart. As an example, consider the young girl with an interventricular septal defect who has had conventional history, physical examination, electrocardiographic and laboratory studies. Only after intracardiac catheterization with fluoroscopy and actual visualization of the interventricular defect by multiple angiocardiographic films can the physician make his decision and the surgeon effect the life-saving repair. Remote and uncertain possibilities of somatic or genetic damage from radiation in this child remain in the background as the immediacy of survival is faced.

X-ray diagnosis has become indispensable in the routine care of patients, and a listing of its uses would be the enumeration of much medicine has to offer.

As an example, diseases of the lung are understood principally because of x-ray diagnostic methods. During those past years

when pulmonary infections, tuberculosis and pneumonia were most important causes of sickness and death, the x-ray played a major part in the control of these diseases. Now that lung cancer has become so common a cause of death, the only method of early detection of the tumor while it is still curable is by x-ray.

X-ray diagnosis is so important in the care of patients that the department of roentgenology in a large general hospital has become the hub of activity in the diagnostic work-up of patients.

Radiotherapy, the treatment of disease with ionizing radiation, has been used from the early days of discovery of x-rays and radium. During those first years of experimentation, radiation was used in the treatment of many benign, malignant and degenerative diseases whose prognosis was bad or whose treatment was inefficacious. At times, radiotherapy has been used in the treatment of many infections, including sinusitis, abscesses, tuberculosis, erysipelas and gas bacillus infection, all of which are now more rationally treated by other more specific agents. Pneumonia was often treated with radiotherapy until the 1930's when the first effective drug and serum treatments took over. Enlargement of the thymus in the newborn infant was also formerly treated with radiation, but the realization that such enlargement is not of clinical significance and the subsequent appearance in treated children of carcinoma of the thyroid and leukemia have made this form of therapy obsolete. During the course of the past 60 years, there has been considerable change in the spectrum of diseases treated by radiation. Only a generation ago most patients receiving radiotherapy had benign conditions, while at present most patients receiving radiotherapy have malignant tumors. Radiotherapy is used definitively for cure in some common accessible cancers, particularly of the uterine cervix, the larynx, skin, and oral cavity. Some of these malignant tumors may be treated either with surgery or radiotherapy, with radiotherapy frequently favored because of preservation of function and structure. As an example, treatment of carcinoma of the larynx with radiation is preferred, because it allows the patient to retain his voice. In cancer of the cervix, radiotherapy is preferred because of the lesser mor-

bidity following treatment.

More frequently, radiotherapy is used palliatively, that is, to mask the signs or symptoms of a malignant tumor. Unfortunately, cancer is a common group of diseases and more patients fail to survive their tumors than are cured. There is obvious drama and satisfaction about the cure of a cancer, but there is also importance in being able to palliate symptoms. Palliative radiotherapy can relieve bone pain, stop bleeding, release the strangulating pressure of a tumor and shrink stinking masses. Too often the role of palliation is disparaged by the cure-conscious physician but never by the stricken patient. The only certainty in this world is that none will leave it alive, and palliation of the pain of a malignant tumor by radiotherapy lends merciful relief to many during their last months of life.

Radiotherapy is the treatment of choice in lymphomas, diseases of the reticulo-endothelial system including Hodgkin's Disease, lymphosarcoma, reticulum cell sarcoma and giant follicular lymphoblastoma. When these diseases are relatively localized in the patient, radiotherapy to the tumors is indicated and chemotherapy is withheld until the disease is disseminated.

Radiotherapy is now entering a new phase of application. With the use of modern super-voltage apparatus, tissues tolerate treatment better and surgical operations following this type of radiotherapy are more feasible. Attempts are currently being made to treat extensive and usually incurable cancers with pre-operative radiation and subsequent surgical extirpation of the tumor. Preliminary results suggest that this combined therapy may find increasing use in tumors of the bladder, lung and laryngopharynx.²

The controlled release of nuclear energy has provided medicine with radioactive isotopes for research, diagnosis and treatment. For research the uses of isotopes are boundless and endless. For diagnosis of disease, a few radioactive isotopes have become useful, the chief of these being radioactive iodine which can be administered in otherwise practically insignificant amounts biologically to diagnose hyperthyroidism.

Other useful, but less popular diagnostic tests with radioactive isotopes include the evaluation of intestinal absorption of fat by measuring absorbed I_{131} in ingested fat, the

measurement of the clearance pattern of radioactive mercury through the kidney, the diagnosis of pernicious anemia by utilization of cobalt 60 and the localization of brain tumors.

In the treatment of diseases, two radioactive isotopes are in the forefront. Radioactive iodine is a valuable drug in the treatment and cure of hyperthyroidism, and it is also of use in the treatment of cancer of the thyroid. The other most useful isotope for therapy is cobalt 60, which has become the most commonly used radiotherapeutic agent for the treatment of cancer.

Even though radioactive isotopes are being used more and more for diagnostic purposes, they are presenting less and less hazard to the patient and user. The development of sensitive detecting and measuring instruments makes it possible to do diagnostic tests with isotopes at such low doses of radiation that safety prevails in this application of radiation.

Hazards of radiation have become understood as the use of radiation in the diagnosis and treatment of disease has developed. In the early years, at the turn of the century, skin burns and resultant radiation skin cancer was observed, and by 1911 leukemia was beginning to be associated with exposure to radiation. Early radiologists in the United States died more commonly of leukemia than did their colleagues. Insofar as the public health is concerned, the induction of leukemia has become the most important *somatic* effect of radiation. Does the use of radiation in the diagnosis and treatment of disease induce leukemia?

The following groups of studies have shown a relationship between leukemia and radiation:

Norman Simon, M.D., a 1939 graduate of Harvard Medical School, limits his practice to his specialty, radiology. He is certified by the American Board of Radiology.

Doctor Simon is chairman of the New York State Medical Society Committee on Health Aspects of Ionizing Radiation, consultant for the Oak Ridge Institute of Nuclear Studies, medical consultant for the New York Operations Office, A.E.C. and Associate Radiotherapist at Mt. Sinai Hospital in New York City.

1. Increase in incidence of leukemia in radiologists. In the study of these causes of death from 1929 to 1943 of early radiologists in the United States,³ the incidence of leukemia was ten times higher than in other physicians. Later, a similar study of radiologists dying between 1952 and 1955 showed the ratio to decrease to less than four to one.⁴ These findings seem reasonable, since early radiologists received as much as 100 rads of total body radiation per year, while modern radiological practice results in doses of less than five rads per year.⁵ It is somewhat conflicting and reassuring to observe that a similar study of British radiologists shows no increase in the incidence of leukemia in this group.⁶

2. Leukemia in patients treated with radiotherapy for arthritis. Large doses of radiation to the spine, several hundred rads, clearly increased the incidence of leukemia in spondylitics in Britain. But not so clear is an increase in incidence of leukemia in those patients treated with lower doses. It is inviting to entertain the view that there is a linear relationship between dose and incidence of leukemia, but such a relationship can not be proved or disproved at low dose levels.⁷

3. Leukemia in survivors of atomic bombing. The increase in incidence of leukemia amongst the survivors of the bombings in Nagasaki and Hiroshima has been pronounced in those who received large doses of radiation, more than 100 rads. But even in the Japanese bombings there were not enough people at risk to make the data valid below doses of about 75 rads. No cases of leukemia have been observed in the 5,000 survivors who received between 20 and 50 rads.⁸

4. Leukemia in children irradiated for enlargement of the thymus. It is now widely held that children are more sensitive to the leukemogenic effect of radiation than are adults. There was a ten-fold increase in leukemia in children treated with radiation during infancy for enlargement of the thymus. Other studies of similar groups have failed to verify the leukemogenic effects of thymus radiation. Despite the uncertainty, it has been found prudent to accept the original study in the practice of radiology.

5. Leukemia in children irradiated *in utero* for pelvimetry. A leukemogenic sensitivity of infants was demonstrated by a retrospective study of leukemic children to determine that they had been irradiated *in utero*.⁹ However, a prospective study on 40,000 liveborn children whose mothers had been irradiated failed to bear out the leukemogenic effect.¹⁰

In summary, leukemia is induced by radiation at high doses, but not necessarily at low doses. Also, there is conflicting evidence, sometimes even at high doses. As an example, no increase in leukemia was found in the survivors of radium treated cancer of the cervix.¹¹ Such a retrospective study has its limitations but it suggests that the distribution of radiation in the body may be an important factor in leukemogenesis. It also suggests the importance of following prospectively such radium-treated patients to determine more accurately the incidence of leukemia after exposure to radium.

Doses of radiation received in the diagnostic use of x-ray are too low to account for a discernible increase in the incidence of leukemia. Genetic mutations from radiation may be another matter, for work on insects and small animals have shown genetic mutations resulting from relatively low doses of radiation. Also, there is no apparent threshold below which mutations do not occur. It is for this reason that the conscientious physician protects the gonads of young individuals from radiation.

The English have recently investigated the practice of radiology to determine the dose of radiation to the gonads being received by its population from medical use of x-rays. The reports of the results of these studies by the Adrian Committee¹² indicate that the mean annual gonad dose from medical use of x-rays is 20 mr, most of this dose being from general diagnostic radiology. This determination is considerably lower than previous estimates, and it is consistent with the recent estimates of the United Nations Scientific Committee on the Effects of Ionizing Radiation, published in 1962.

The Adrian Committee showed the following summary of annual genetic doses in mr per person from all medical radiology.

Table 1
ALL MEDICAL RADIOLOGY

Summary of Annual Genetic Doses in mr per Person	
Medical Use	Dose
General Diagnostic Radiology	14.07 mr.
Miniature Chest Radiography	.01
Dental Radiography	.01
Radiotherapy—	
External: benign diseases	4.44
malignant	.52
Internal: benign	.13
malignant	.05
<hr/>	
TOTAL ANNUAL GENETIC DOSE	19.3 mr.

In comparison with the other main source of genetically significant radiation, the gonadal dose from medical radiology is about one-fifth of the annual dose to gonads from natural background radiation.

Table 2
ANNUAL GONAD DOSE

Source	Dose
Natural	
External	
Cosmic	28 mr.
Terrestrial	47
Atmosphere	2
Internal	
K-40	19
C-14	2
<hr/>	
Medical X-Ray	About 100 mr.
	About 20 mr.

Surveys made on the dose to gonads from diagnostic x-rays show that this dose is decreasing as physicians utilize safe modern procedures for protection of the gonads.

The principal method of reducing the dose to gonads is the restriction of the radiation beam to the part examined. Restrictive cones and collimating devices are routinely used by the conscientious physician to avoid radiation of the gonads and to decrease the dose to the bone marrow. An ideal beam restricting device has a variable diaphragm which defines a rectangular beam and which contains a light-beam for accurate localization of the part to be irradiated. Such devices are now available and increasingly being used.

Another important influence on lowering the significant genetic dose is the selection by the physician of his patients for x-ray examination. Most of the dose to gonads is due to a few types of frequently made examinations; barium meal, barium enema, intravenous urography, lumbosacral spine and

obstetrical examinations. Obstetrical abdominal x-ray examinations and pelvimetry have been most important sources of dose to the gonads. Since the work of Stewart showing a possible relationship between prenatal x-rays and childhood leukemia, the number of prospective mothers who have x-ray pelvimetries has dropped sharply. With this drop has naturally come a sharp decrease in the average population gonad dose.

The gonads can be shielded with lead or lead rubber in many instances in both females and males when these structures are included unnecessarily in the beam of radiation.

Fluoroscopy accounts for some of the pertinent dose to gonads, and this is kept to low levels by the physician by careful dark-adaptation of his eyes and by use of new fluoroscopic screens. Further reduction of gonad dose and of marrow dose to patient and physician can be achieved by intensifying the fluoroscopic image electronically. Image intensifiers for fluoroscopy now allow these examinations to be done at far less than one-tenth of the radiation required with a usual fluoroscopic screen.

The high speed intensifying screens, films and developers available to the physician cut down the dosage requirement for x-ray filming and correspondingly reduce gonadal dose.

Inspection and registration of radiation equipment by state and local health departments appear to be important factors in reducing dose by uncovering equipment which for technical reasons is not suitable for safe use. Apprising the radiation user of defects in his apparatus is a most important

Table 3
FACTORS REDUCING GONAD DOSE

1. CONES AND COLLIMATORS
2. SELECTION OF PATIENTS
3. SHIELD GONADS
4. FLUOROSCOPY
 - a) Dark-adaptation
 - b) New fluoroscopic screen
 - c) Image intensification
5. HIGH SPEED
 - a) Intensifying screens
 - b) Films
 - c) Developer
6. FILTERED BEAM
7. INSPECTION AND REGISTRATION OF EQUIPMENT
8. EDUCATION OF PHYSICIAN

role of registration and inspection programs and contributes to the reduction in gonadal dose.

But the most important factor which reduces dose to gonads is discussion of this topic in medical meetings. Radiology is old, not new. The effects of radiation, however, are becoming clarified at great rate recently. Postgraduate education of the physician in pertinent effects of radiation is the most effective promoter of safe procedures in radiation. As an example of such activity, a general session of the New York State Medical Society Annual Meeting in May, 1963 was devoted to the effects of radiation and to safe procedures in its use. Similar programs in which radiologists join their colleagues in medicine and dentistry to discuss radiation should be fruitful in establishing a downward trend in population gonadal dose while continuing the increased use of radiology in the highly technical developments of advancing medicine.

In summary, the medical use of radiation for diagnosis and treatment of disease has been a most important factor in advancing

the frontiers of modern medicine. More than 60 years of experience with radiation has also advanced knowledge of the hazards of radiation. Modern safe procedures in radiation should cause far less genetic mutation than does natural background radiation and somatic effects should be of little significance. The benefits of medical radiation to the sick are inestimably great. □

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Mt. Sinai Hospital, New York City, New York

AMA TO STAGE FIFTH NATIONAL CONFERENCE ON THE MEDICAL ASPECTS OF SPORTS

The Fifth National Conference on the Medical Aspects of Sports sponsored by the American Medical Association, under the auspices of the AMA Committee on the Medical Aspects of Sports, will be held in Portland, Oregon, at the Benson Hotel on December 1, 1963. The Conference will be held in conjunction with the Clinical Meeting of the American Medical Association, December 1-4, 1963.

As was true of the previous conferences on this subject held in Los Angeles, Denver, Washington, D.C., and Dallas, the Fifth Con-

ference will cover a wide range of subjects. Included will be papers, panels and discussions relating to training and conditioning, prevention and treatment of injuries, physiology of sports participation and other subjects.

Those interested in receiving announcements concerning the Conference should address the Secretary, Committee on the Medical Aspects of Sports, American Medical Association, 535 North Dearborn Street, Chicago, Illinois 60610. □

Some Aspects of Cancer Registry Procedures at the University of Oklahoma Hospital*

G. R. RIDINGS, M.D.
EDWARD N. BRANDT, JR., M.D.

Meaningful evaluation of cancer treatment techniques requires long-term follow-up of large collections of cases ("Tumor Registries"). Electronic data-processing techniques, by increasing efficiency of handling, increase the scope of usefulness of these registries.

THERE IS increasing evidence that the treatment of cancer has gradually improved in recent years, and there are indications that the ever-increasing establishment and use of cancer registries has played a significant role in this improvement.¹ The purpose of this report is to outline some aspects of the composition and functioning of the Cancer Registry in the University of Oklahoma Hospital, especially noting those features found to be most helpful in its operation.

Before discussing the cancer registry in detail, it might first be well to point out the need for them. Primarily, the registry provides a means whereby the medical staff can evaluate and improve its own capabilities in the management of the cancer patient² This

type of continuing post-graduate self-education in neoplastic disease is vital for physicians in nearly every branch of medicine for two reasons. In the first place, the medical school curriculum simply cannot equip a student to adequately treat malignant diseases. To gain such competency requires not only specific knowledge, but experience, and technical ability as well. This is extremely important, almost uniquely so, in the treatment of a patient with cancer because lack of good initial management is very likely to rob that patient of any chance of cure and thereby doom him to an unpleasant demise. Secondly, individual cancer cases offer little instruction in proper diagnostic and treatment techniques, efficacy of treatment, side effects, expected results, and general management. The natural history of most malignant neoplasms is such that large numbers of cases must be accumulated in order to really define it. Even larger numbers are necessary to shed light on such important basic considerations as patterns of growth, metastatic patterns, complications, etc. This information is essential for adequate treatment of this disease.

Thus, a self-imposed yardstick is necessary and this must be based upon data derived from experience with large numbers of cases.

Accumulation of this type of data is possible only through the establishment of some mechanism, usually within a single hospital,

*From the University of Oklahoma Medical Center.

but sometimes covering an area such as a state, which is usually called a CANCER REGISTRY. This approach to the problem was formalized on January 1, 1956, when a properly functioning Cancer Registry was required for approval of a cancer program by the American College of Surgeons.

By definition,² the Cancer Registry is a "repository of records containing pertinent information on diagnosis, treatment, follow-up and end results of *all* patients, private and non-private, with a diagnosis of cancer who have been treated as in-patients or through the out-patient department of the hospital." "The Registry . . . is required to record data on every patient with a diagnosis of cancer . . . recorded (in such a manner as to) make possible a systematic follow-up of patients for an annual report to the medical staff, including an analysis of survival and end results, as well as for special studies." "*This is a requirement for approval primarily as evidence that the registered data have been presented to the medical staff and not kept unused, in a safe repository in the files.*"

After two or more years of existence, the Cancer Registry should be able to prepare for the medical staff a report of survival experience and end results for cases diagnosed in any one or combination of years. This necessitates an effective follow-up system, and it is generally accepted that over 90 per cent follow-up is necessary.

Some further cautions should be noted: (a) if non-malignant cases are included in the Cancer Registry, the volume of work would be such that follow-up would become impossible, (b) when the job of establishing and maintaining a Cancer Registry is assigned to a Clinic secretary who receives no further instruction or supervision from the medical staff, the registry is apt to include only cases seen in clinic (and so, not *all* cancer cases) and (c) "if the registry is oriented around pathology records, then it is likely to include only microscopically confirmed cases (thus is less likely to keep the staff informed about the proportion of microscopically confirmed cases) and therefore can not contain sufficient information on therapy or follow-up to make it of interest or use to anyone on the staff except the pathologists."³

Thus, the basic "clinical" or "practical teaching" nature of the registry is formally recognized. This foundation must be kept intact, however simple or elaborate may be its organization. Other functions, such as research or extensive teaching techniques may be appended, but not at the expense of the basic clinical functions:

(a) CASE FINDING: This must include all cancer patients, with or without pathology reports.

(b) FOLLOW-UP of *all* registry patients. This is the most time-consuming and demanding function of all, and it requires the cooperation of all people involved especially the physicians.

(c) RECORDING AND REPORTING of elementary data. Such data should include the distribution of patients as to age, sex, race and site of cancer; the time delay between the onset of the first symptoms to the diagnosis and treatment; stage of disease; per cent of total cases confirmed by microscopic examination; types of initial management and therapy; percentage of cases successfully followed; survival reports including site, stage, age, sex, type of treatment, survival time, status of patient, status of neo-

Since graduating from Vanderbilt School of Medicine in 1950, G. R. Ridings, M.D., has been certified by the American Board of Radiology. He is Professor of Radiology at the University of Missouri Medical Center.

Doctor Ridings is a member of the American College of Radiology, the Association of University Radiologists, the Radiological Society of North America and the Society of Nuclear Medicine.

Edward N. Brandt, Jr., M.D., Ph.D., graduated from the University of Oklahoma School of Medicine where he is now Assistant Professor of Preventive Medicine and Director of the Biostatistical Unit and Medical Research Computer Center.

Doctor Brandt is a member of the American Federation for Clinical Research, the American Association for the Advancement of Science, the Sigma Xi, the Alpha Omega Alpha and the American Statistical Association.

UNIVERSITY OF OKLAHOMA HOSPITALS
A. STUDY OF MALIGNANCIES: INITIAL REPORT

Pt's Hosp No. 1-6
Pt's Name _____
Date _____ Service _____ 7-8
☐ In-pt
☐ OPD

PATIENT IDENTIFICATION (This part completed by Social Service)

9-10

Pt's Address _____ Phone _____ County _____
Home Physician _____ Address _____ Phone _____
Follow-up Ref. (Spouse, parent, child, sib, other relative, employer, bank, etc.)
1. Name _____ Address _____ Phone _____
2. Name _____ Address _____ Phone _____
3. Name _____ Address _____ Phone _____
4. Name _____ Address _____ Phone _____

11-14	BIRTH DATE Mo, da, yr.	22-23	AGE (Now) _____ years	28	PAY STATUS
15	MARITAL STATUS <input type="checkbox"/> Unknown <input type="checkbox"/> Married <input type="checkbox"/> Single <input type="checkbox"/> Divorced <input type="checkbox"/> Separated <input type="checkbox"/> Widowed	24	RACE & SEX <input type="checkbox"/> White M. <input type="checkbox"/> White F. <input type="checkbox"/> Negro M. <input type="checkbox"/> Negro F. <input type="checkbox"/> Ind M. <input type="checkbox"/> Ind F. <input type="checkbox"/> Other M. <input type="checkbox"/> Other F.		<input type="checkbox"/> Pvt <input type="checkbox"/> Non-Pvt

INITIAL TUMOR INFORMATION (Completed by physician making clinical diagnosis.)

16	PREVIOUS MALIGNANCY? (Outside this Hosp) <input type="checkbox"/> None <input type="checkbox"/> Yes, same as now (Both site & Path) <input type="checkbox"/> Yes, not same (Either site or path) <input type="checkbox"/> Yes, Dx unknown	25	PREV PRIMARY MALIG. this Hosp? <input type="checkbox"/> None <input type="checkbox"/> One <input type="checkbox"/> Two <input type="checkbox"/> More	29-32	THIS MALIG: 1st Rx period
		26-27 SUM	ETIOLOGICAL FACTORS, THIS MALIG (Check all that are pertinent) <input type="checkbox"/> None known <input type="checkbox"/> Family Hx positive _____ Relation <input type="checkbox"/> Predisposing Occup _____ (Write in) <input type="checkbox"/> Exposure to predisposing drugs, hormones, radns, etc. _____ (Which) <input type="checkbox"/> Others _____ (Write in)	33-36	DATE SYMPTOMS BEGAN Mo, da, yr.
17	Rx TO PREV MALIG <input type="checkbox"/> None <input type="checkbox"/> Surg <input type="checkbox"/> Radn. <input type="checkbox"/> Other			37-40	DATE MALIG FIRST SUSPECTED, by pt or anyone; mo, da, yr.
18-21	DATE OF PREVIOUS Rx Mo, da, yr.				DATE OF CLINICAL DX THIS CENTER (OPD or In-Pt) Mo, da, yr.
ANY ADDITIONAL COMMENTS: 			NAME OF PHYSICIAN FILLING IN THIS FORM: 		

INSTRUCTIONS: (1) Physician initiates Form A as soon as clinical diagnosis of malignancy is made; send immediately to Tumor Office.
(2) Physician notes all green items, entering dates, site and path, and checking (do not circle) appropriate numbers in green boxes.

Figure I: Form A. Initial Report

plasm at death of patient; and recording of patients with multiple neoplasms.

Some other important points which should not be overlooked include:

(1) To be effective in its clinical role, the registry must have the interest and co-operation of the physicians who treat and

follow cancer patients. Much of the essential information can be furnished only by the attending physician. There must be complete and uniform recording of certain basic data if the case material is to be suitable for statistical analyses and evaluation. In general, physicians, even those who see cancer

patients, are not primarily concerned with malignant disease, but deal with it along with all the other ailments of man. Without special orientation, they do not furnish consistent information, even of the most elementary sort.

Our method of handling this matter was to outline on forms (discussed below) the few elements of data which are needed on all patients, with the forms arranged for the easiest possible recording of the information.

(2) It is fallacious to believe that a secretary in some sequestered part of a hospital can adequately abstract pertinent information from charts in which information is haphazardly recorded. Under such circumstances, reporting of results cannot be valid.

Some registries exist separated from the clinical world of their institution. In such circumstances, a careful look would show that they are usually operated by a secretary who has carefully organized a polished number-and-name-counting and case-load-reporting operation; who can glibly keep the inspecting agency happy (who sometimes appears mainly interested in whether or not the columns of case-load figures balance); but whose work is out of touch with the clinical problems which they supposedly represent.

Both of these considerations (1 and 2, above) are especially true in the teaching hospital or medical school setting where those in training (medical students and

house officers) usually have, at best, only transient interest in this field of disease, and even then simply don't have the technical ability to do an adequate job, if unguided.

(3) It would be most fallacious to set up a general hospital registry aimed at some person's or group's research interest, expecting that all of the clinicians would take time to supply the information for that individual's projects.

(4) Automatic data processing equipment is now available in any large hospital or medical school. Once a few items of carefully-selected data are recorded, this efficient equipment allows for easy production of a wide variety of useful reports to be rendered routinely and for convenient and rapid selection of cases for special studies.

At this hospital, the Cancer Registry was organized with a clinical orientation and was adapted to electronic data processing techniques. Clinical orientation has been maintained by placing the Registry under the direction of a physician who is a clinician dealing either wholly or in large part, with patients with malignant disease. He must also spend the time necessary to orient and advise the secretary and to check her work. He should also have sufficient knowledge of data processing techniques to allow him to work effectively with the Biostatistical Unit.

Forms, carefully adapted to electronic data processing techniques, were constructed. These were oriented toward clinical feasibility and utility (for example, physician-directed items are color-coded and require

INSTRUCTIONS:

- 16 Include any malignancy outside this Hospital
- 17 By history only, if this is the only available information.
- 18-21 No comment.
- 25 This is an important entry; it denotes multiple primary neoplasms.
- 26-27 No comment.
- 29-32 Date symptoms began; by history.
- 33-36 Date malignancy first **suspected**, by patient or anyone else; by history (this may show a significant patient delay). This data may be that of an outside diagnosis.
- 37-40 Date of Clinical Diagnosis in this center (OPD or In-Pt): **NOTE: this is the most important single item on this report; it is the basis for the report.** By 'Clinical Diagnosis' it is meant that this is (a) **NOT** one item of a list of possible diagnosis or a guessed possibility; but (b) that it is a diagnosis of cancer, not necessarily yet proven histologically, but based on some other reasonable evidence (visible lesion, mass, x-ray examination, cytology, etc).

Figure II: Instructions For Form A.

Pt's Hosp No _____

Pt's Name _____

Date _____ Service _____

☐ In-pt

☐ OPD

41-42

FORM No. 7444i

- Figure III: Form B. Treatment Period

careful spatial arrangement of the material on the forms. Each step of the preparation of this material was carefully coordinated with the Biostatistical Unit personnel.

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visiting the key clinics where cancer patients first appear including the Tumor Clinics, Radiation Therapy Clinic, General Medicine Clinic, etc. There, she checks to see if there are tumor cases, helps fill out the forms, and answers any questions of the staff and residents. The Cancer Coordinator is always on call if needed. This is probably an important reason why the program has been well accepted.

The Cancer Registry forms shall now be presented.

Form A. STUDY OF MALIGNANCIES: INITIAL REPORT. This is shown in figure 1. The INSTRUCTIONS (figure 2) for completing this are printed on the back of it. Note that much of the requested information is supplied by someone other than the physician. This form is a preliminary one which is completed as soon as cancer is clinically diagnosed, usually before biopsy-proven.

Form B. TREATMENT REPORT: This is shown in figure 3 and its INSTRUCTIONS in figure 4. As the INSTRUCTIONS indicate, this form is completed at the end of the *initial treatment* period for the particular cancer under consideration. This form indicates the definitive diagnosis and this information is necessary before a case is entered into the Accession Registry. In subsequent follow-ups, if re-treatment or an-

other type of treatment is administered, this information is noted on form C: FOLLOW-UP REPORT (figure 5). Note that a second form B is never made on the same lesion.

Forms A, B, and C are available in clinics and on wards, where they are filled in by hand and sent directly to the Cancer Registry for typing in duplicate. The typed carbon copies are sent to be punched into IBM cards. The typed original copies of forms A and B are placed on opposite sides of a single sheet of heavy stock paper and retained in the Cancer Registry, where they comprise the Abstract File. The typed original copy of form C is kept in the Cancer Registry. The handwritten copies of A and B are kept in the patient's hospital chart; also, the copy of the last C report as well as one blank C, for the next visit, are placed in the patient's chart.

Where interpretations in entries or coding are needed, referral is made to the *Handbook for Cancer Registry Secretaries* and to the *End Results Evaluation Program Uniform Punch Card Code*. Coding of tumor site is performed according to the *International Statistical Classification of Diseases, Injuries, and Causes of Deaths*. Histologic Coding is according to the *Standard Nomenclature*. Staging of the lesion is such that it can easily fit most four-stage groupings, but in addition, specific assignment of numbers can be made where convenient. For example, in can-

INSTRUCTIONS:

- 43-45 SITE: State anatomic part as exactly as possible (eg.: bridge of nose, inner canthus, left eye; upper outer quadrant of left breast; left aryepiglottic fold and pyriform sinus; etc.).
- 46-48 PATH: This is the summary statement of the pathologist.
- 49 BASIS OF DIAGNOSIS: This establishes the degree of validity of the diagnosis. Reading downward check only the first pertinent entry.
- 50 STAGE: Please make a real attempt to select the most pertinent designation.
- 51-53 ASSOC. DIAGNOSIS: If there is a disease or disorder which might interfere with treatment, note it here. If there is more than one, you need note only the one which you believe to be the most important detriment to treatments.
- 54-55 TYPE OF TREATMENT: This includes any and all procedures or therapies, administered during or after the clinical diagnosis of cancer, which is intended to **modify, control, remove, or destroy** cancer, whether primary or metastatic. Treatment does not include procedures or therapies which are purely diagnostic, symptomatic or suggestive. Any treatment which is not considered cancer-directed is to be classified as 'no treatment'.
- 56-59 No comment.
- 60-62 No comment.
- 63 STATUS AT END OF TREATMENT: Please select appropriate designation with care.

Figure IV: Instructions For Form B.

UNIVERSITY OF OKLAHOMA HOSPITALS
C. STUDY OF MALIGNANCIES: FOLLOW-UP REPORT

Pt's Hosp No _____
Pt's Name _____
Date _____ Service _____
☐ In-pt
☐ OPD

COMPLETED BY CANCER REGISTRY		COMPLETED BY PHYSICIAN	
64	METHOD OF CONTACT <input type="checkbox"/> Phone <input type="checkbox"/> Letter <input type="checkbox"/> Referring physician <input type="checkbox"/> Insurance Co. <input type="checkbox"/> Hosp. record (OPD or adm) <input type="checkbox"/> Death certificate <input type="checkbox"/> Lost contact		CA BEING FOLLOWED: Site: _____ Rx THIS PERIOD (Follow-up Rx; Not initial Rx)
65-68	DATE OF THIS CONTACT Mo, da, yr.		73-74 SUM TYPE (all used) <input type="checkbox"/> No Rx recommended <input type="checkbox"/> Surgery; for cure <input type="checkbox"/> Surgery; palliate or incomplete <input type="checkbox"/> Irradn; for cure (except isotope) <input type="checkbox"/> Irradn; palliate or incomplete (except isotope) <input type="checkbox"/> Isotope <input type="checkbox"/> Hormone Rx to tumor <input type="checkbox"/> Surgical endocrine ablation <input type="checkbox"/> Chemotherapy <input type="checkbox"/> Pt. refused Rx <input type="checkbox"/> Pt. took Rx elsewhere <input type="checkbox"/> Other or unknown
69-71	SURVIVAL TIME Months since Rx		
72	HAS A NEW CA been diagnosed in this pt? <input type="checkbox"/> No. <input type="checkbox"/> Yes If yes, give new Ca diagnosis: _____		
NOTE ANY ADDITIONAL COMMENTS HERE:		75-78	DATE Rx STARTED (Direct Rx to Ca) Mo, da, yr.
		79	CONDITION: THIS CONTACT <input type="checkbox"/> Alive; well <input type="checkbox"/> Alive; no clinical evidence of Ca, but w/sig Rx complication. <input type="checkbox"/> Alive; Ca status unknown <input type="checkbox"/> Alive; w/ca; no known metastasis <input type="checkbox"/> Alive; w/metastasis <input type="checkbox"/> Dead; of Ca <input type="checkbox"/> Dead; w/ca but not due to Ca <input type="checkbox"/> Dead; no Ca <input type="checkbox"/> Dead; Ca status unknown <input type="checkbox"/> Status unknown (lost to follow-up)
		80	AUTOPSY <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
		RETURN APPOINTMENT: Date, to whom, reason _____	
		NAME OF PHYSICIAN FILLING IN THIS FORM: _____	

INSTRUCTIONS: (1) Physician initiates Form C on each return of the patient (OPD or In-Pt); send immediately to Tumor Office.
(2) Physician notes all green items, entering dates, site and path, and checking (do not circle) appropriate numbers in green boxes.

Figure V: Form C. Follow-up Report

cer of the uterine cervix, it is easy to designate the following: O = Stage O; 1 = Stage I; 2 = Stage II; 3 = Stage III, etc.

Items under TYPE OF TREATMENT are arranged so that the physician can check all those used. If combined treatment is

used, the coded sum will indicate the types used.

Certain other Cancer Registry forms are required. The Accession Registry is arranged so as to provide a convenient form for case-load bookkeeping.

INSTRUCTIONS:

- 73-74 TYPE OF TREATMENT: This includes any and all procedures or therapies, administered during or after the clinical diagnosis of cancer, which is intended to modify, control, remove, or destroy cancer, whether primary or metastatic. Treatment does not include procedures or therapies which are purely diagnostic, symptomatic or suggestive. Any treatment which is not considered cancer-directed is to be classified as 'no treatment'.
- 75-78 No comment.
- 79 STATUS AT END OF TREATMENT: Please select appropriate designation with care.
- 80 No comment.

Figure VI: Instructions For Form C.

The Patient Index Card (figure 7) serves as an alphabetical access to the Registry.

JOHN DOE: 68 W-M-DIV 34-67-48
 GEN. DEL., OKLAHOMA CITY, (55-OKLA.) OKLA.
 6 5-16-65 7:45 AM PH JA 4-5678
 ELECTRICIAN TEX 5-24-89
 OPD-SURG. NEW PM
 ADENOCARCINOMA BREAST
 DR. HARRY GREEN, OKLAHOMA CITY, OKLAHOMA
 MARY DOE WIFE PH SAME
 ADDRESS SAME NOTIFY SAME

Figure VII: Patient Index Card

The Follow-up Control Cards (figure 8) have colored metal tabs for quick identification of follow-up status, and yield dates for follow-up letter, visit, etc. These cards also are designed for convenient recording of follow-up data from the form C reports.

Certain routine yearly reports are made by the Biostatistical Unit, including:

I. ADMINISTRATIVE (each year)

1. Number of new patients seen during this data period.
2. Number of follow-up patient visits during this data period.
3. Number of additional follow-up contacts during this data period.
4. Number of patients carried over from last period for follow-up.
5. Number of patients expiring during this data period.
6. Number of patients lost to follow-up which includes all those from previous periods as well as those added during this period.

II. CLINICAL STATISTICS (each year):

A. For each of the lesion site categories and on microscopically proven lesions:

1. Follow-up data:
 - a. Total number of cases diagnosed and/or treated for the period of this report.
 - b. Patients not followed for full period covered by this report:

- (1) No evidence of cancer when last seen
- (2) With cancer when last seen
- (3) Cancer status unknown when last seen
- (4) Total number of patients not followed for the full period covered by this report.

c. Patients followed through full period:

- (1) No evidence of cancer when last seen
- (2) With cancer when last seen
- (3) Cancer status unknown when last seen
- (4) Total number of patients expiring within the period of the report.

d. Patients expiring during period of this report:

- (1.a) Dead of cancer
- (1.b) Dead, with cancer, but not due to cancer
- (2) Dead, no cancer
- (3) Dead, cancer status unknown
- (4) Total number of patients expiring within the period of the report.

e. Percentage of patients followed for full period covered by this report: Item c4 + Item d4

Item a

f. Percentage of patients surviving for full period covered by this report: Item c4

Item a — Item b4

2. Survival data, categorized by type of treatment and by primary site.
 - a. Absolute survival percentages by year

FOLLOW-UP REFERENCES

FOLLOW-UP CONTROL

* See instructions on back (Continue same columns on back).
* When patient expires, draw a red line under last entry.

[illegible]

- b. Survival time in months.
- 3. Treatment results categorized by type of treatment and by primary site.
 - a. Subjective Change (Symptoms, etc.)
 - (0) None

- 439

- (1) Better
- (2) Worse
- (9) Unknown
- 4. Stage of disease (number of patients in each stage) for each primary site.
- B. For all patients, grouped together, same data as (IIA1).
- C. Individual patient information, printed on 5" x 7" card.
 - 1. Patient's hospital number
 - 2. Department treating patient
 - 3. Type of treatment
 - 4. Date of last contact
 - 5. Source of contact
 - 6. Survival time in months
 - 7. Date of report
 - 8. Current condition
 - (0) Alive; well
 - (1) Alive; no clinical evidence of cancer but with significant treatment complication
 - (2) Alive; cancer status unknown
 - (3) Alive; with cancer but with no known metastases
 - (4) Alive; with metastasis
 - (5) Dead; of cancer
 - (6) Dead; with cancer but not due to cancer
 - (7) Dead; no cancer
 - (8) Dead; cancer status unknown
 - (9) Patient's status unknown (lost to follow-up)
 - 9. Autopsy
 - (1) Yes
 - (2) No
 - (9) Unknown
- III. Research data: This is requested as needed and might include life tables, designed prospective controlled studies, retrospective studies, etc.

The extent of these reports is possible only because of the handling by electronic data processing equipment. Because the cancer reporting procedures are adapted to these techniques, the Biostatistical Unit can efficiently handle volumes of data many times in excess of that of this hospital. This Cancer Registry program is designed to be as useful for regional or state registries as for local or hospital registries.

If this were to be organized on a statewide basis, the routine periodic reports out-

lined above would give a considerable amount of important information concerning survivals, epidemiology, etc. Also, the data could lead to delineation of innumerable investigative projects. These projects are not an actual function of the Cancer Registry but are made possible by its work.

Other functions of the Registry include:

(a) *Routine*: case-finding, follow-up of all patients to death, reports to State Health Department, and reports to American Cancer Society.

(b) *Special* (because of the location in a Medical School Hospital): counseling of investigators (access to data, etc.); preparing data for Tumor Conferences; case-finding for Tumor Conferences; preparing wall displays of survival data by site of origin (to be developed into a permanent up-to-date visual follow-up chart for the more important entities), photographing visible lesions, and maintaining a file of photographs.

Without thorough case-finding and follow-up the Registry cannot be a really worthwhile enterprise. For these functions to succeed, diligence is required of both the participating physician and the Cancer Registry staff.

In spite of careful planning, there must be a continuous search for new cancer cases. This includes routinely visiting clinics and wards and inquiring about cancer cases as well as receiving and inspecting all pathology reports, discharge diagnoses, surgery schedules, etc.

The importance of patient follow-up records is not understood by many. Without follow-up of a very high percentage of cases survival data quickly becomes worthless. This must be a continuous effort and makes up a large proportion of the work load of the registry. This activity also demands the direct attention of the coordinator because it is so closely aligned with outpatient appointments, etc. Without this close clinical supervision, misunderstandings, errors, hardships, and irritations are constantly arising. With clear clinical direction, there is greatly increased efficiency for the patient, reduction of irritations to physicians in the hospital, and improvement in the completeness and accuracy of follow-up records.

Once a case is found, that patient's chart is tagged and thereafter, whenever the pa-

tient is seen, the chart is automatically routed through the Cancer Registry before its return to the record room.

As noted above, this system is designed so as to be utilized for a larger (i.e. regional or state) registry. As such, it could be useful for statewide "routine" reports or for certain epidemiological studies. It would not furnish the information necessary for detailed study, for example, of particular treatment techniques. This is only one example of where the registry might delineate a special area of interest or pertinence, but the actual detailed study would require going to the original records. This, of course, would require the permission of the patient's physician. This may be an important point to many who otherwise might be reluctant to allow their material to be incorporated into a larger registry. The broader more routine studies mentioned above, however, are of inestimable value.

In summary, the Cancer Registry in the University of Oklahoma Hospital is designed to effectively take care of the primary clin-

ical needs (case findings, follow-up, yearly survival reports) as well as to insure efficiency and completeness of basic data collection. The material is constructed so that the physician can in the easiest manner possible, furnish a few basic items of information on all patients with cancer. At the same time, the scope of usefulness of the registry has been broadened by adopting electronic data processing techniques. This system is organized so that it can handle a larger activity, such as a regional or state registry.

* * *

ACKNOWLEDGMENTS: The authors gratefully acknowledge the assistance of Dr. Pearl Fisher of the Biostatistical Unit in the preparation of the report forms. □

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University of Missouri Medical Center,
Columbia, Missouri

ABSTRACT

INCIDENCE AND SIGNIFICANCE OF CRYOFIBRINOGENEMIA*

Two of the authors had previously reported bleeding, thrombosis, or both associated with malignant tumors. The plasma of these patients contained large quantities of cryofibrinogen. This study was designed to determine the frequency of these cold precipitable proteins and to identify the disease categories with which they are associated.

Twenty eight of 665 hospitalized patients had cryofibrinogen in excess of 100 mg per cent. These levels were found in 14 of 99 patients with malignant disease, 4 of 46 with primary thromboembolic disorders and less frequently in several other disease categories. Three patients developed high levels in the first week following myocardial infarction. These disappeared during convalescence. None of 135 normal patients with levels above 100 mg per cent manifested unexplained bleeding and an additional three patients had a combination of thrombosis and unexplained bleeding.

REVIEWER'S NOTE: This article points out one of the several interesting blood protein changes than can occur in a variety of disorders, especially malignant diseases. The presence of cryofibrinogens or cryoglobulins can be checked by chilling plasma and serum at four degrees c. for 48 hours and observing whether a precipitate or gel forms. This should be kept in mind es-

pecially in patients with malignant disease who develop unexplained bleeding purpura, thromboses, mucosal oozing or increased sensitivity to cold.

*Incidence and Significance of Cryofibrinogenemia. P. A. McKee, J. M. Kalbfleish, R. M. Bird. Journal of Laboratory and Clinical Medicine, 61, Vol. 2, 203-210, February, 1963.

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Reprints of the above publications are usually available on request from the senior author, c/o Mrs. Joan Campbell, Veterans Administration Hospital, 921 N.E. 13th Street, Oklahoma City, Oklahoma.

Quinidine In Atrial Arrhythmias

PAUL HOUK, M.D.*

QUINIDINE is a potent and useful drug in the treatment of atrial arrhythmias. Because of the potential toxicity of the drug, it requires careful observation and an informed physician. This paper is not intended to be a complete review of the problem but to point up some of the indications and methods of use in atrial arrhythmias.

The general actions of quinidine can be summarized as follows: 1) it depresses myocardial excitability, decreases myocardial contractility, and prolongs the conduction time; 2) it blocks the action of the vagus on the heart; 3) it prolongs the effective refractory period; and 4) it acts as a vaso-depressor.

Therapeutic conversion of atrial fibrillation to sinus rhythm is a controversial subject. The indications have been summarized as follows: 1) the patient in whom the appearance of atrial fibrillation leads to deterioration of a previously stable state; 2) the chronically ill cardiac patient who would have increased cardiac output with a regular sinus rhythm and thereby increase his cardiac reserve; 3) the patient with persistent atrial fibrillation after the successful treatment of hyperthyroidism; 4) the patient with embolic phenomena who if converted to regular rhythm would have less likelihood of further emboli; 5) the patient with persistent atrial fibrillation after successful mitral commissurotomy; 6) the patient with recent conversion to atrial fibrillation regardless of underlying disease. The duration of the arrhythmia, the state of the myocardium and numerous other factors enter in to that group which is resistant to con-

version. Quinidine conversion should not be attempted until the patient is fully digitalized and should be attempted only in hospitalized patients.

A technique of progressively increasing doses may be used. After a test dose of 0.1 gm. of quinidine sulfate is administered to ascertain hypersensitivity, 0.2 gm. is given every two hours for five doses. The patient is observed before each dose. If conversion does not occur, the dose is increased to 0.4 gm. every two hours for five doses. If toxicity does not develop and fibrillation continues, the dose is increased to 0.6 gm. and 0.8 gm. under the same schedule. The drug should be discontinued if the QRS interval is prolonged by over 50 per cent of its control value. Other indications to discontinue are severe vomiting and frequent premature beats. Lesser symptoms of nausea, tinnitus, and diarrhea are not absolute indications to stop the drug. Electrocardiograms should be taken prior to the fourth and fifth doses except when a dose of greater than 3.0 gm. has been administered and then the tracing should be taken before each dose. Quinidine sulfate in divided doses or oral quinidine gluconate may be used as maintenance after conversion. Atrial flutter is preferably treated with digitalis. Of the one-half that will not convert with digitalis alone, quinidine should be added.

The use of quinidine in the control of atrial arrhythmias may be more successful in controlling the recurrent attacks than is digitalis.

In summary, quinidine remains an important drug in the control of atrial arrhythmias but requires an alert physician and a thorough knowledge of the pharmacology of the drug. □

*Chief Resident, Department of Medicine, University of Oklahoma Medical Center, 800 N.E. 13th Street, Oklahoma City, Oklahoma.

Dean's Message

The Department of Preventive Medicine and Public Health at the University of Oklahoma Medical Center expects to have more than 30 graduate students in training this fall. They have diverse educational backgrounds, coming to the field of preventive medicine from medicine, nursing, engineering, physics, mathematics, general biology, psychology, medical technology, administration and statistics. This diversity has necessitated the development of flexible training programs which can be tailored for the individual, utilizing his assets as fully as possible while preparing him for a career in preventive medicine and public health.

The department is approved for two residencies that prepare physicians for certification by the American Board of Preventive Medicine. One is a three-year program in general preventive medicine (without public health), designed primarily to equip physicians for academic careers in the field. It is the only training program of this sort now offered by a medical school. (Others are conducted by the schools of public health.) The Department of Preventive Medicine and the State Department of Health also are jointly approved by the American Board of Preventive Medicine for training in the field of public health. This is a two-year residency.

For physicians and non-physicians both, the department offers work in the major areas of biostatistics and computer science, parasitology, environmental health, epidemiology and administration leading to the M.S.

and the Ph.D. degrees awarded through the Graduate College. These various programs form an integrated whole, allowing interested persons to get a broad perspective on preventive medicine and public health while delving more deeply into some particular aspect of it.

In addition to the residencies and the training given within the Graduate College, the department offers special courses through the University of Oklahoma Extension Division and the College of Continuing Education. Offerings have included short but intensive courses in epidemiology, current practices in rehabilitation and in nursing home administration. They were developed to make educational opportunities available for the working adult who wishes to improve his knowledge and skills without taking a year or two from his job in order to do so. As an extension of this idea, a special curriculum has been approved by the university's College of Continuing Education to enable such persons to obtain a full course of studies in public health by taking a course or two at a time.

The wide variety of training programs, the diverse backgrounds of students and the broad spectrum of educational opportunities in the department provide both staff and students with a stimulating atmosphere in which to work and learn. It is hoped that the remarkable development which the department has shown in recent years will continue undiminished. □

Mark R. Everett

Disability Insurance Program Broadened And Improved

The association's Council on Insurance and the Insurance Company of North America have announced major modifications in the group disability income insurance program. A longer pay period for disability due to sickness and increased monthly payments are options now available to association members.

Because of excellent loss experience over the past two years, the Council and its insurance advisor, C. L. Frates and Company, requested and received more liberal benefits from the insurance company; benefits which will make the association's plan the only one of its kind in the United States.

Under the new setup, physicians may select up to \$800 per month coverage, payable for lifetime on accidental disabilities and to age 70 on disabilities due to sickness. The waiting periods for disability income payments are optional according to the physician's individual choice, commencing on the first day, 31st day, or 181st day following disability.

The new plan simply adds two more options to the existing program. Where a physician could previously select his waiting period, length of payment for sickness disability of either three or five years, and could obtain from \$200 to \$600 per month indemnity, he may now continue with his present program or select the additional options of sickness benefits to age 70 and/or increased monthly indemnity to \$800 per month.

Physicians wishing to take advantage of the expanded benefits will necessarily have to show evidence of insurability. However, as in the past, new members of the association who apply within sixty days of mem-

bership are guaranteed \$200 per month coverage regardless of health status. All members under age 60 are eligible to apply.

Insurance Company of North America's new program will become effective November 1, 1963. Brochures will be mailed soon to all OSMA members, including the nearly 900 physicians now protected under the existing group plan, and agents will contact all doctors regarding the expansion of present benefits or new enrollment into the program.

Best In Nation

The Council on Insurance studied the losses for recent years and discovered that no claim had exceeded a period of one year. Thus, the association's program was of benefit to many doctors who would not have qualified under the American Medical Association plan which excludes first year protection.

A one-year policy combined with the AMA's long range plan will provide basically the same benefits as the new OSMA program, but comparative costs of the two systems indicates that the OSMA plan carries the lower premium.

The Council recognizes, however, that the AMA plan is tailored to the insurance needs of some physicians; those who are economically able to take care of themselves during the first year of disability, or those in group practices wherein the clinic members are guaranteed one year's income by their associates.

According to C. L. Frates, the OSMA approved plan is the least expensive comprehensive disability income insurance program available to Oklahoma physicians. OSMA is the first state or national medical association in the United States to offer a program incorporating short waiting periods, long term payments for sickness disability, and high monthly limits of indemnity. □

A Political Handbook

Few physicians like what is going on in government—or dislike at least a part of what is going on in government—and more and more they are trying to do something about it; to inject their views into the political arena; to obtain representation and influence the course of events.

It used to be called dirty work, but in recent years John Q. Public decided that government needn't be bad if good citizens become involved in it, so we see "politics" coming of age. It's now a socially acceptable pastime.

But how do you go about it?

"It all begins in the precincts," wisely advises Phil Dessauer, Associate Editor of the *Tulsa World*. In his new booklet, the *Oklahoma Political Handbook*, he relates in simple language the role of good citizenship, what is to be done, how it is done, and the importance of doing it.

County medical society presidents have been mailed samples of the booklet by Rex E. Kenyon, M.D., Chairman of the OSMA Council on Public Policy, and other copies have been distributed at regional "Operation Hometown" meetings. It is hoped that many Oklahoma physicians and wives will purchase the "political primer," read it, and put it to work in their own precincts, in county and state politics, and in their relationships with their U.S. Senators and Congressmen.

In addition to describing all-important precinct work, the booklet contains information on the workings and organization of Oklahoma's political parties, the state legislature and its legislative processes, congressional districts of the state, lobbyists and pressure groups, measuring the credentials of candidates, writing your Congressman, county voting records, roster of state officials, and Oklahoma's political calendar.

The booklets may be obtained from Phil Dessauer, 2151 South 77 E. Avenue, Tulsa 29, Oklahoma. Single copies are 25 cents each; 1,000 or more are 20 cents each. A limited number of copies are available from the OSMA. □

District Meetings For All OSMA Members

OSMA President Joe L. Duer, M.D., will stump the entire state during the months of September, October and November, he announced recently in a letter to all OSMA Trustees. The Trustees are requested to arrange special meetings of physicians and wives within their respective districts.

The energetic physician from Woodward told Trustees that he desired personal appearances before groups in all fourteen districts in order "to bring the projects and problems of the profession directly to the attention of the membership, and to sample the opinions of those I am trying to serve."

At most of the meetings established by Trustees thus far, the auxiliary members will be present, and Mrs. Tom C. Sparks, President of the Woman's Auxiliary to the OSMA, will be afforded an opportunity to appear on the program with Doctor Duer.

Also, in many instances, a representative of the Oklahoma Medical Political Action Committee will share the platform.

While in the various geographic areas of the state, the OSMA leader is making himself available for personal appearances before civic clubs and other organizations. Several luncheon meetings have already been arranged by Trustees.

In his address to the district meetings of physicians and wives, Doctor Duer is expected to hit the highlights of association affairs, stressing the importance of work to be done by the profession, both individually and collectively.

The organization, representation and financing of the OSMA will be discussed, and emphasis will be placed on such current and future problems as the Kerr-Mills program, Social Security health care legislation, public health and mental health matters, relationships with voluntary prepaid health organizations, relationships with other professional groups, continuing education, physician recruitment, health care costs,

good citizenship and improved public relations.

"I'm attaching great importance to these district meetings," Doctor Duer said, "and I look forward to visiting with the majority of the OSMA membership and their wives this Fall." □

7,000 Registrants Expected At AMA Portland Meeting

More than 7,000 physicians and their guests are expected to converge on Portland, Oregon, for the 17th Clinical Meeting of the American Medical Association, December 1-4.

It will mark the first time that the AMA has held a clinical meeting in Portland. The association has held two of its annual meetings in Portland, however, in July, 1905, and in July, 1929.

Doctor Otto C. Page, general chairman of arrangements for the December meeting, said nearly all of the scientific sessions will be held in Portland's new Memorial Coliseum. The scientific and industrial exhibits also will be shown there. Conveniently located within a few miles of the business district, the multi-million dollar Coliseum offers new facilities throughout.

When the AMA held its clinical meeting in Seattle in 1956 the total physician attendance was 3,032.

"We feel," Doctor Page said, "that this figure will be much higher when the AMA meets in Portland."

The secretary-treasurer of the AMA Board of Trustees, Doctor Raymond M. McKeown, lives in Coos Bay, Oregon, and he, too, expects an exceptionally high attendance.

"The majority of doctors," he said, "will come from the Pacific Northwest, but there should be good representation from other states along the West Coast and also from the Mountain states."

Lectures, panels, symposia and breakfast roundtables again will be presented at the Portland meeting on specially selected topics, as well

as color television and medical motion pictures. More than 100 physicians will deliver lectures on the scientific program during the four-day meeting, and more than 200 scientific and industrial exhibits will be shown at the Coliseum, many of which will be based on new scientific research.

Doctor Huldric Kammer, chairman of the Scientific Program Committee, said the scientific exhibits are an important part of the clinical meeting and added that "their long and continued popularity at AMA meetings is good evidence of their teaching value to the physician. The exhibits are so varied that the medical subject matter has some interest to every physician regardless of specialty." □

Las Vegas To Host Rocky Mountain Conference

A scientific program designed to provide information of everyday use to a broad spectrum of medical interests will be presented at the Twelfth Biennial Rocky Mountain Medical Conference, October 30 to November 2, 1963, to be held at the Dunes Hotel in Las Vegas, Nevada.

The conference, held in conjunction with the 59th Annual Meeting of the Nevada State Medical Association, will feature scientific papers and panel discussions by sixteen nationally known physicians; plus an histologist, embryologist, and a vice-president of a national liability insurance company.

Registration at the conference is open to any doctor of medicine. A registration fee of \$20, which includes a luncheon, will be charged.

The Rocky Mountain Medical Conference is a joint enterprise of the state medical societies of seven states: Colorado, Idaho, Montana, New Mexico, Nevada, Utah and Wyoming.

For further program details and conference information, write to: Thomas S. White, M.D., General Chairman, Rocky Mountain Medical Conference, 3660 Baker Lane, Reno, Nevada. □

Ritzhaupt Honored As Senator

A Guthrie surgeon, 72-year-old Louis H. Ritzhaupt, M.D., was honored on June 14th by the entire Oklahoma State Senate at the conclusion of his 26th year as State Senator from Logan County.

By special resolution, the Senate paid homage to the accomplishments of the Democratic lawmaker, who is the senior member of the Oklahoma Legislature and the only physician presently serving.

In a recent interview, Doctor Ritzhaupt reflected upon his life as a pioneer Oklahoman, physician, medical organization leader and elected official.

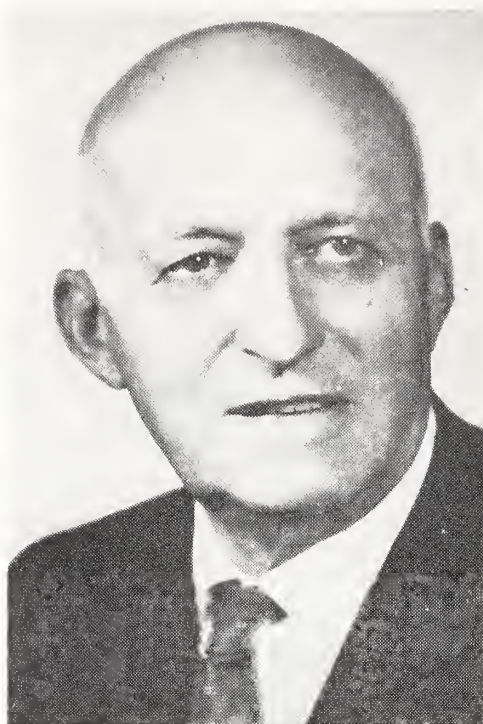
He was only three years old when his parents brought him to Guthrie in 1893, moving their home from Kansas. "At the age of five," he recalls, "I wanted to become a physician," and this dream was nurtured and finally realized in 1917 when he graduated from George Washington University School of Medicine, Washington, D.C.

A veteran of both World Wars, the Senator established his general practice in Guthrie in 1918. Shortly, thereafter, he began his role as a public servant by serving a four year term on the Guthrie School Board, followed by two years of service as a city councilman.

In 1932, Doctor Ritzhaupt was elected to the Oklahoma State Senate where he served 20 years before meeting his only defeat in 1953. Four years elapsed and the often referred to "Fighting Doctor-Legislator" had done just that and regained the Logan County Senate post.

While representing his district and Oklahoma for over a quarter of a century, Senator Ritzhaupt has probably authored more legislation than any other member of the Oklahoma Legislature. In the Twenty-Ninth Session alone, he authored 15 bills in the Senate of which seven were passed and signed into law.

Senator Ritzhaupt is given credit for such major legislation as that



LOUIS H. RITZHAUPT, M.D.

which created the State Department of Public Safety (originally called the State Police); the Crippled Childrens Law; and the 1935 law which first granted state aid to primary and secondary schools in Oklahoma.

Senator Ritzhaupt was instrumental in drafting legislation which created the Board of Regents for Oklahoma Colleges; established County Health Department units; the Uniform Narcotics Act; the Oklahoma Turnpike Authority; and it was he who sponsored accreditation of the O.U. Medical School.

It was his bill, introduced and passed in the 29th Session, which completely recodified the public health laws of Oklahoma. During the same session, he co-authored Senate Bill 295 which appropriated \$84,000 to finance operation of the State Medical Examiners system.

Despite 26 years of service in the Oklahoma Senate, he has maintained his medical practice in Guthrie. In addition, he has actively participated in the affairs of the Oklahoma State Medical Association by serving as state president in 1935-36 and as a member of the House of Delegates for 32 years.

Following is the text of the resolution presented to him by the Oklahoma Senate at the close of the Twenty-Ninth Legislative Session:

A RESOLUTION TENDERING THE HIGHEST ESTEEM OF THE OKLA-

HOMA STATE SENATE TO ITS BELOVED COLLEAGUE, SENATOR LOUIS H. RITZHAUPT; AND DIRECTING THE DISTRIBUTION OF THIS RESOLUTION.

WHEREAS, one of our members of this Oklahoma State Senate is especially deserving of respect and homage for long service to this body in a manner that has won respect and admiration of all persons; and

WHEREAS, the Honorable Senator Louis H. Ritzhaupt has served the State of Oklahoma ably and in a most respectable manner for 26 years; and

WHEREAS, through his great legislative ability and tireless effort this Senator has come to serve, and serve he has, as advisor, counselor, and an invaluable source of information and knowledge to his colleagues of the Senate; and

WHEREAS, the compassion and understanding of Senator Ritzhaupt of Logan County has been of great value to the State of Oklahoma and to all members, past and present, of this body who have had the pleasure of serving with Senator Ritzhaupt; and

WHEREAS, Senator Ritzhaupt has always manifested a deep devotion to the welfare of his fellow man and his conscientious efforts are reflected by the laws enacted by the legislature of this state during the long and highly commendable tenure of Senator Ritzhaupt.

NOW, THEREFORE, BE IT RESOLVED BY THE SENATE OF THE TWENTY-NINTH LEGISLATURE OF THE STATE OF OKLAHOMA:

SECTION 1. That the members of this body, here assembled, tender their highest and most sincere esteem to the Honorable Senator Ritzhaupt upon the completion of his fourteenth session as a member of the Oklahoma State Senate.

SECTION 2. The Secretary of the Senate shall prepare a copy of this resolution to be presented to Senator Louis H. Ritzhaupt as a symbol of the sentiment herein expressed.

Adopted by the Senate this 14th day of June 1963.

ROY C. BOECHER,
President of the Senate □

Army Psychiatrist Named Mental Health Chief

Colonel Albert J. Glass, USA (MC), was named Director of Mental Health for Oklahoma at a recent meeting of the Board of Mental Health. He is expected to assume the post in November upon his retirement from active military service.

The physician was born in Baltimore, June 25, 1908. He graduated from the University of Maryland Medical School in 1932, and later trained in psychiatry and neurology at Central Neurological Hospital, New York City (1934-35) and at Johns Hopkins Hospital, Baltimore (1938-41).

In 1941, Doctor Glass was commissioned in the United States Army, serving continuously ever since and holding a number of important positions. Following several years of hospital service, he subsequently served as Chief of Neuropsychiatry Services at Oliver General Hospital (1947-48); at Letterman Hospital (1948-50); at Brooke Army Medical Center (1952-54); and at Walter Reed Hospital (1955-56). He has also had experience in psychiatric research administration and in psychiatric training.

During the Korean War, Doctor Glass was Chief Consultant in psychiatry for the Far East Command, and has just completed a similar assignment in Europe.

For five years (1956-61), the physician was Chief of Psychiatry and Neurology for the entire Army, stationed in Washington, D.C. In this capacity, he served on many important national boards and committees, including those of the Group for the Advancement of Psychiatry, the National Institute of Mental Health, and others.

Doctor Glass is noted for his major interest in the improvement of patient care, as evidenced by an outstanding record of psychiatric treatment under both combat and peacetime conditions. He is well known among the nation's psychiatrists, many of whom served under his command. □



Mental Health Study Underway

A project for statewide mental health planning, soon to be undertaken by Oklahoma citizens under the auspices of the State Health Department, was given momentum on August 16th when Governor Henry Bellmon held the first meeting of his Mental Health Advisory Committee in the Capitol's Blue Room. Pictured with the Governor are (left to right) John Griffith, M.D., director of the project; Joe L. Duer, M.D., OSMA President; Bellmon, and J. D. McCarty, Speaker, House of Representatives. Doctor Duer cautioned the group to keep the study community oriented, to be realistic in defining goals, and most importantly, to approach mental health problems on a purely professional basis.

Self-Improvement Program for Doctors' Aides

Does your girl Friday need help in meeting the growing demands of her job? Then enroll her in the Fifth Annual Seminar for Medical Assistants to be held September 28-29, on the Oklahoma State University campus, Stillwater, Oklahoma.

The seminar is sponsored by the Oklahoma State Medical Assistants Society in co-operation with the College of Business, Oklahoma State University.

The purpose of the program is to broaden the understanding of the medical assistant, thus enabling her to provide better service to the physician and patient. Moreover, new ideas for self-improvement as well as renewed interest in the medical assistant's profession can be gained by attending the seminar lectures and discussions, and through informal association with other medical assistants attending.

The program will feature such topics as: personal adjustment and

human relations; applications of medical law for the medical assistant; telephone techniques; mailing procedures and services; and, a lesson in humor.

Other subjects appearing on the program will include: bookkeeping in the medical office; guidelines for mental and physical health; communicating ideas to other people; and, medical ethics.

To enroll in the two-day seminar, simply give name, address and mail to Professor Clayton Millington, Director, Business Extension Service, Oklahoma State University, Stillwater, Oklahoma—74075. A check or money order in the amount of \$15.00 if a member of the Oklahoma Medical Assistants Society or \$17.50 if a non-member, must accompany the enrollment.

Room accommodations can be reserved at the Union Club (site of the seminar) for the night of September 28. □

BOOK REVIEW

PHYSICIAN: HEALER AND SCIENTIST, by Dana W. Atchley, M.D., The Macmillan Co. New York (1961), 129 pages.

This little gem which is directed primarily at the college undergraduate who is contemplating a professional career is one of a series of "career" books under the general editorship of Charles W. Cole. It attempts to portray the physician in his dual role of both healer and scientist and to give, in lay terms, some insight into what the medical student is involved in in each of his years; what internship and residency consist of; the what and whys of specialties and of general practice; and perhaps of most interest to this reviewer, short descriptions of the various roles the physician may choose to occupy within the framework of medicine in the mid-twentieth century.

This is a volume that every student of medicine (both those in medical school and those with the degree) would do well to read and to peruse. Doctor Atchley will find many physicians who disagree with some of his points (many of these controversial items stem more from Doctor Atchley's New York provincialism which differs from our own southwestern United States brand than from a true basic philosophic difference), but all in all, the reappraisal of one's own motivation, conduct and self-image which will inevitably result from reading this book will be of great benefit to each who does so.

It would behoove every physician to make certain that this volume is available in the library of his own undergraduate college and to be sure that the pre-medical adviser not only has access to a copy but also that the adviser is himself familiar with it. It would in no wise do harm to have it listed as required reading for all persons upon acceptance to a medical school.

As a former student of this great teacher and clinician, your reviewer

EXCELLENT OPPORTUNITY for general practitioner to fill vacancy in three-man cooperative group. All the advantages and none of the disadvantages of group practice. Phone or write William A. Matthey, M.D., 301 Pershing Drive, Lawton, Oklahoma. Elgin 3-5005.

PHYSICIAN WANTED to work full time in university health work in Oklahoma State University, Stillwater. Excellent working conditions, regular hours and many extra benefits. Contact Donald L. Cooper, M.D., Director, Student Health Service, Oklahoma State University, Stillwater, Oklahoma.

FOR SALE, 1961 red and white, Chevrolet super sports coupe, air conditioned, power steering, power brakes, bucket seats. Also, clinical camera with enlarger. Contact Mrs. Peter E. Russo, VI 3-4953.

WANTED certified or board eligible internist to join four certified internists in well-rounded clinic group. Contact Gelvin-Haughey Clinic, Concordia, Kansas.

COMPLETELY equipped clinic building for sale or lease in Atoka, Oklahoma. Central heating and air-conditioning. 2,700 square feet. Available July 1, 1963. Call or write Mark Mills, R.R. 2, Durant. WA 4-0503.

LOCUM TENENS WANTED. Need G.P. for two or three months period between now and January 1st. Contact A. C. Hirshfield, M.D., 908 N.E. 50th St., Oklahoma City 5.

OFFICE SPACE for rent, five-room suite, northwest area, Oklahoma City. Share reception room with established practitioner. Excellent opportunity for general practitioner, or

could not fail to see the author himself portrayed in the book's title and subtitle, and no more apt description of Doctor Atchley's own personal philosophy could be devised than "Physician: Healer and Scientist."—*John P. Colmore, M.D.* □

specialist. Contact Elmer Ridgeway, Jr., M.D., 3601 North May. WI 3-3344.

NEW ULTRA-MODERN 19 room clinic with laboratory, physio-therapy and x-ray. Across the street from a three-year-old, 31 bed hospital. Located in a four-county area where there are 11 doctors for 29,000 people. Would prefer to rent space with guaranteed income, but would consider hiring somebody. Contact David Fried, M.D., Hollis, Oklahoma.

SOLO G.P. needs G.P. associate. Clinic facilities and hospital available. City of 4,500 with trade area of 10,000, convenient to Oklahoma City and Tulsa. No investment necessary. Salary for six months, percentage thereafter with minimum guarantee, to full partnership. Car furnished. Contact C. E. Woodard, M.D., Drumright. Telephone Area Code 918, Flanders 2-2555.

WANTED Ophthalmologist or EENT to join six physician group in western Oklahoma. No investment. Guaranteed annual income \$20,000. Contact Alex Shadid, M.D., Community Hospital-Clinic, Elk City, Oklahoma.

PEDIATRICIAN, 1958 graduate of the University of Oklahoma School of Medicine, will be available for private practice July, 1964. Interested in either group or solo practice in any Oklahoma town, 25,000 population or more. Contact Robert T. Dooley, M.D., U.S. Naval Hospital, Jacksonville, Florida.

G.P. LOOKING for locum tenens opportunity for 30-40 days, prior to May 31, 1964. Contact Key E. The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

G.P. DESIRES an associate November or December 1963. Salary to begin, opportunity for partnership at later date. Complete new office facilities in town of over 50,000. Contact Key D, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

A Concept of Civil Rights

A RESTRICTED CONCEPT of civil rights has been thrust before every American during the racial problems of recent years but little has been said to illuminate the entire scope of these precious and fantastically productive cornerstones of individual freedom. The health and other provisions of civil rights should have equal consideration.

Our most cherished civil rights are freedom to worship, write, speak, assemble and petition regardless of race, creed or color. Likewise we have the right to equal protection against unreasonable seizure or search as well as protection from loss of life, liberty and property without due process of law.

In all there are twenty four constitutional civil rights provided by the Bill of Rights and constitutional amendments. Subsequent court opinions and reversals of opinions as well as countless civil laws and controversial bureaucratic edicts have clouded the fundamental principles of civil rights which were designed to guarantee each citizen maximum freedom of action while protecting him from destructive forces against his life, liberty and property.

The word **LIBERTY** in American civil rights refers to a positive, constructive freedom to produce, to provide, to love, to work, to fear or to hate, to succeed or fail, to worship or not to worship, to speak, to write, to assemble or to petition. They are freedoms of choice to act or not to act. If the choice is not to act, the consequences are not guaranteed by the government.

Civil rights do not guarantee freedom from individual productive and moral responsibilities.

The word **WELFARE** in the preamble to the Constitution and Bill of Rights can be understood only in the light of the spirit of the documents which it introduces. An unbiased interpretation of these rights in no way could include federal responsibility for individual welfare except as explicitly provided. Further responsibility is retained "by the states or the citizens."

In the field of health, American civil rights do not suggest that personal care, whether mental or physical, is any more a federal responsibility than the provision of food, clothing, shelter or education. Our civil rights refer only to "common defense" and

"general welfare of the United States." These functions are left to "the states or the people."

One interpretation of certain civil rights was thought to justify a Department of Health, Education and Welfare. It suggested that federal activity to help individual citizens would improve the nation as a whole. This seemed reasonable until the line of thinking was continued to a point which would empower the federal government to make a Bernarr MacFadden of every octogenarian, an Einstein of every citizen while providing swimming pools and Cadillacs for all. Such a concept is ridiculously open-ended.

If we believe that our civil rights were intended to permit and to encourage individual responsibility then the existence of a Department of Health, Education and Welfare is unconstitutional. If further support of its unconstitutionality is needed, consider the following practices in welfare areas. Should the federal government dictate the choice of a physician for individuals? Should it control certification and selection of hospitals, payment of physicians' income, standards for medical care, control of the use and choice of drugs, the source and choice of food, clothing, shelter, education and employment? All these choices are currently dictated by the federal government for certain groups of citizens with an expressed plan to include all citizens tomorrow.

When the federal government provides specific welfare benefits to minority groups (often for reasons of patronage) it deprives other groups, including most citizens, of certain basic civil rights. If we wish to experiment in welfare programs such experimentation should be done by individuals, groups and last of all the 50 states. Mistakes and competitive achievements in "doing good" at these lower levels are far less costly.

Substantial federal inroads have been accomplished through the subtle ruse of providing so-called "civil rights" or more accurately "minority license." Such minorities

include racial groups, veteran groups, aged groups, indigent groups, labor groups, tenant farmer groups, government employee groups, armed forces groups, under-privileged groups, captive nation groups, in fact, most groups except the poor taxpayer group which is the victim of a federal Robin Hood philosophy characterized by taking from producers and giving to non-producers.

It is stated authoritatively in the Book of Genesis that you are your brother's keeper. As an individual you are responsible for your brother — not someone you may hire to keep him. An employee cannot assume your personal, moral responsibilities. Unfortunately, as it turns out in our "modern" welfare system, men are deprived of carrying out their individual moral responsibilities to their brothers. Our brothers are hurt because we help them only impersonally and involuntarily. Thus a man loses two friends: his underpaid employee and his under-loved brother — all under the guise of "civil rights."

We have reached the state of providing "modern" federal welfare unconstitutionally which must be paid for by future generations. We are selling our freedoms for immediate personal gain and more votes.

Isn't it more reasonable to support the constitutional principles of our republic instead of reverting to the *pre-horse-and-buggy*-days of totalitarianism and despotism as Germany has done twice in the past 50 years?

A second facet of American civil rights is the right to free employment. This has always been a right of citizens and non-citizens alike.

Oklahoma is to be commended for establishing an Oklahoma Human Rights Commission. The enabling law states that all citizens are guaranteed the right of free employment regardless of race, color or *CREED*. Those whose *CREED* is our constitution and a belief in the right of person-

ally earning liberty, life and property without coercion cannot condone federally imposed compulsory unionism of third party domination of employee and employer. Such a concept should establish the validity of 20 states right to work laws and the proposed constitutional amendment in Oklahoma.—
J. R. Stacy, M.D. □

Welfare Woes

IN SPEAKING *negatively* about centrally-controlled social security medicine for *all* over-65 U. S. citizens, organized medicine has offered a *positive* alternative.

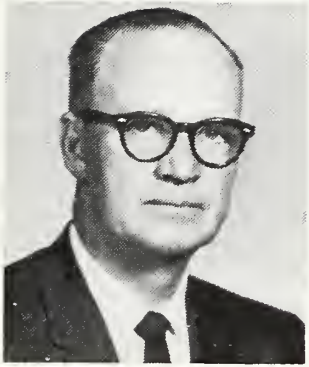
For oldsters who can afford it, many voluntary prepaid plans offer quality protection at fair prices. For those less fortunate, the Kerr-Mills Act provides tax-paid benefits under a locally designed and controlled plan.

The alternative is generally working well. State after state is setting Kerr-Mills in motion, and more and better private policies are being sold. Oklahoma has kept pace in both respects.

However, our Kerr-Mills program is not without its problems: State funds are inadequate to finance a steady growth in utilization; the popularity of transferring new financial responsibilities to the Department of Public Welfare dims the prospect of obtaining more health care funds in the future; and economies at the expense of welfare recipients are not looked on with favor.

Further cutbacks in payments to doctors and hospitals are predictable. There appears to be no other immediate solution. However, in the long-range, OSMA Committees hope to negotiate a more actuarially sound program.

Since physicians admit and discharge patients, the problem of increased utilization is ours to help solve. Careful use is the watchword of a successful Kerr-Mills program, just as it was with prepaid plans. □



The emphasis that is being placed upon mental health today, both from the national as well as the local levels, makes certain that some form of activity is going to be proposed and instituted. Our State Department of Health has a grant of \$50,000 to conduct a survey of the state on mental health problems. It is being actively supported by Governor Bellmon. This survey promises to be the first and most extensive statewide survey ever done by any state. The results will be widely used and quoted by all of the states of the Union.

For these reasons it is imperative that the medical profession, the only profession that is qualified to speak with authority about any health matters, needs to become very interested in the problem. I am indeed gratified that so many physicians reported to the meeting of the Planning Committee at Norman on September 25th. We as a profession have the obligation to add our knowledge and our guidance to these efforts. We are the ones, at present, who are most intimately connected with the problems, and we will remain the most interested party after the survey is over and the recommendations are given and activated.

At the Norman Conference, I was thankful for the very favorable comments received from many lay personnel about the interest shown by the profession. It was no doubt one of the best public relations gestures that has come our way in some time. The lay people are very aware that this is basically a medical problem, but contrary to other similar events in the past where the profession was conspicuous by its absence, this time we were there. All physicians who were there deserve a vote of confidence and thanks.

As the survey progresses, task forces will be instituted and local committees will be formed. Here is the most important area where the local home-town physician can function. I urge every physician to assume his responsibilities in this project and let his influence and thought be felt and heard. Only by this method can well-founded and carefully considered conclusions be drawn. And from these conclusions will come the recommendations from which final action will be taken. This is a responsibility and an obligation which the profession cannot afford to neglect. Here is where we can avoid the ever too often heard lament, "Why didn't somebody do something about it?" Now is the time to do something about it.

Joe L. Quigg, M.D.

Plain Film Diagnosis of Congenital Heart Disease*

CHARLES E. SHOPFNER, M.D.
GENENE BAKER, M.D.

*A method of analysis of plain films
of the heart is presented which
enables all physicians to use this method
to better advantage.*

THE DEVELOPMENT of cardiac surgery has increased the demand for early detection and precise diagnosis of congenital heart disease. Because of the benefits offered by cardiac surgery it is important that the general practitioner, the internist, the surgeon, the cardiologist and the radiologist be familiar with all of the diagnostic methods used in the evaluation of congenital heart disease. Although cardiac catheterization, electrocardiography, phonocardiography and angiocardiology are employed for the complete and refined diagnosis of cardiac disease, the routine plain heart films remain one of the most important contributory adjuncts to correct diagnosis. If patients with congenital heart disease are to benefit from newer surgical techniques it is mandatory that the physician not practicing in a large center be

familiar with the plain film diagnosis of congenital heart disease.

The purpose of this paper is to discuss the value and limitation of the plain film study of the heart and to suggest an approach to the analysis of the films that should be of value to all physicians. No attempt will be made to outline all of the radiographic findings in all types of congenital heart disease.

GENERAL CONSIDERATIONS

There have been different opinions as to the value of the routine radiographic examination of the heart. This difference of opinion has varied from statements saying that it is completely valueless, to others it is the most important clinical examination in the study of congenital heart disease. Obviously, neither of these can be wholly true and the correct answer is to be found somewhere between the two extremes.

Actually the value of the radiographic examination of the heart depends on four factors:

1. Knowledge of clinical information.
2. Knowledge of the pathophysiology of congenital heart disease.
3. The type of congenital heart disease present.
4. Knowledge of radiographic findings caused by the pathophysiology.

*From the Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

To attempt to evaluate cardiac films in complete ignorance of other clinical information is most hazardous. The presence or absence of cyanosis, the electrocardiographic changes, the presence or absence of murmurs and thrills are of the utmost importance. Roentgen interpretation must be tempered by other clinical information. For instance, certain radiographic changes indicate one thing in the presence of cyanosis and an entirely different thing in the absence of cyanosis. Increased lung vascularity in the absence of cyanosis means a simple left to right shunt; whereas, the same increased lung vascularity in the presence of cyanosis is most likely due to transposition of the great vessels. Certain radiographic changes in a cyanotic patient accompanied by electrocardiographic evidence of left ventricular hypertrophy are pathognomonic of tricuspid atresia. Right bundle branch block is an accompanying finding in atrial septal defects.

The success of any roentgenographic examination will depend on one's basic knowledge of the pathological and physiological aspects of disease and this is particularly true in congenital heart disease. The radiographic signs are determined directly by the pathological defect present, and the abnormal physiology produced by it. The plain film findings cannot be analyzed unless one understands the hypertrophy, hypoplasia, shunts, jets and other abnormal physiological factors caused by pathological lesions.

The type of congenital heart disease exerts considerable influence on the value of plain heart films. While certain congenital lesions are easily diagnosed there are others that are impossible. In the latter category would be included such defects as truncus arteriosus, one, two, and three chambered hearts and other complex multiple anomalies.

Finally one's knowledge of the radiological findings in the various types of congenital heart defects, and their interpretation in the light of the other clinical information enables the plain film examination of the heart to achieve its full value. Certain pertinent features must be noted which will serve as useful building blocks in the completion of an exact final diagnosis. Sometimes the study of congenital heart disease can end with the radiographic examination but this is the unusual case and more often the radio-

graphic findings merely contribute to the successful final diagnosis.

METHOD OF STUDY OF ROUTINE HEART FILMS

The pertinent features which are to be studied in the analysis of heart films are:

1. Heart size.
2. Heart contour.
3. Position of the heart.
4. Pulmonary artery.
5. Lung vascularity.
6. Aorta.
7. Other chest structures.

Each of these features contribute certain information and will now be considered separately.

HEART SIZE. Without doubt the radiographic examination is the most exact method of determining gross heart size. It goes without saying that the size of the heart is important in determining the presence of heart disease, determining the need for certain corrective measures, and is useful as a specific diagnostic sign. Any cardiac lesion which has not caused increase in the size of the heart is usually more mild than one which has enlarged the heart. A lesion which has not increased the size of the heart usually can wait for corrective procedures until the optimum age of the patient has been reached. Minimal cardiac enlargement may be present and not appreciated until a chest roentgenogram is made. Occasionally,

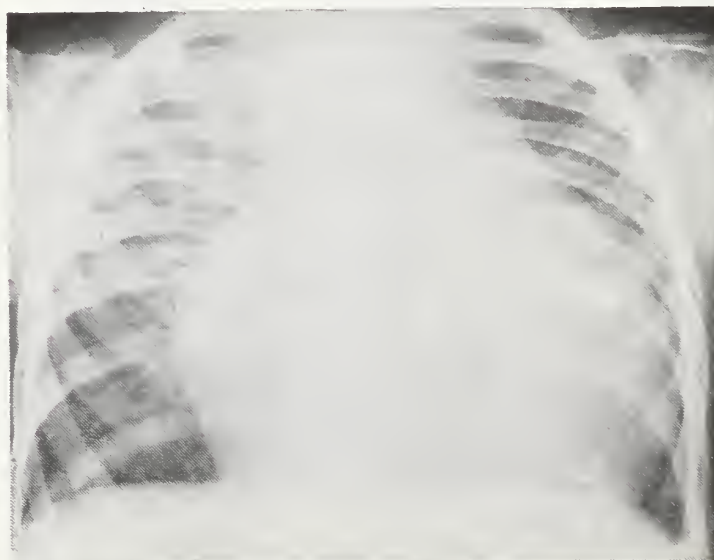


Figure 1. Infantile Coarctation of the Aorta in a two-month-old infant. Such a greatly enlarged heart, with no specific contour, in an infant under the age of six-months should always suggest the possibility of coarctation.

marked increase in heart size can be specific for a particular diagnosis; e.g., the greatly enlarged heart in an infant under six months of age with signs of congestive heart failure is most likely secondary to infantile coarctation of the aorta (figure 1).

HEART CONTOUR. The contour of the heart is determined by the size and position of the specific chambers and the great vessels.

One of the most characteristic contours is hardly beyond the limits of normal. Figure 2 shows the slight prominence of the right atrium, the hypoplastic aorta, and minimal increase in the pulmonary vascularity of an atrial septal defect.

Absence of the right atrial shadow or flattening of the right border of the heart with a concave waist and a prominent left ventricular border are indicative of tricuspid atresia (figure 3). This is in contrast to the well known *coeur en sabot* or "sheep nose" contour of Tetralogy of Fallot in which, although again the waist is concave, the right heart is enlarged and rounded and the apex is tipped up from the left diaphragm (figure 4). If there is an accompanying right sided aorta (found in 33 per cent of Tetralogies), the right base also will be prominent.

Both Ebstein's anomaly and atrio-ventric-

ular communis show an unusually large right atrium. The enlargement is generally more marked in Ebstein's but they may simulate one another. The two entities usually can be differentiated, however, by changes in the pulmonary vascularity (figure 5).

The "figure eight" or "snow man's heart" is practically specific for that type of anomalous pulmonary vein drainage with a persistent left superior vena cava.

The contour of transposition of the great vessels is distinctive. The base of the heart is narrow with an elongated prominent left border due to the transposed course of the ascending aorta. Usually both the right and left ventricles are enlarged. This silhouette can be simulated by the type of tricuspid atresia with transposed great vessels and a large pulmonary artery.

POSITION OF THE HEART. The position of the heart may be extremely important in determining the type of congenital heart disease present. The most outstanding example of abnormality in position is seen in hypoplasia or atresia of one of the branches of the main pulmonary artery. Figure 6 illustrates a shift of the heart into the left side of the thorax due to hypoplasia of the left pulmonary artery. Because of the small pulmonary artery, the left lung is underdeveloped with a resultant loss of volume of the entire left chest and shift of the heart to this side.

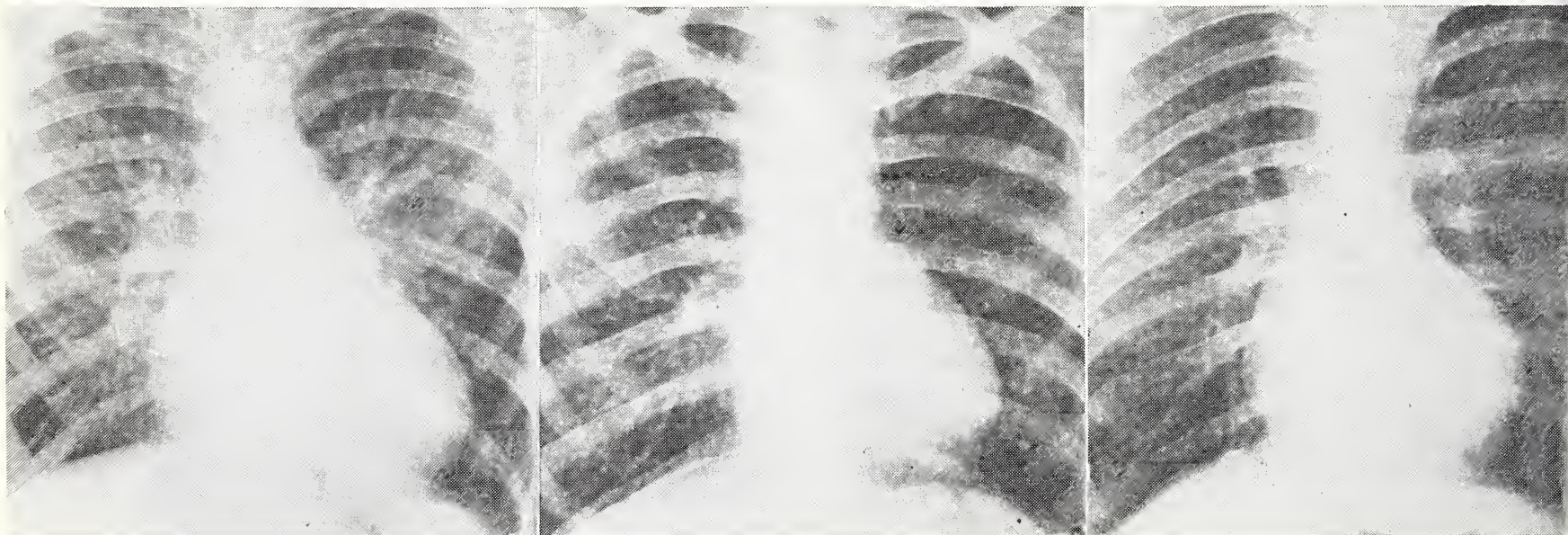


Figure 2

Figure 3

Figure 4

Figure 2. Interatrial septal defect. The radiographic changes are hardly beyond the limits of normal, but a slightly prominent right atrium, slightly bulging pulmonary artery, minimal increase in lung vascularity and an absent aorta should always suggest this possibility. Figure 3. Tricuspid atresia. Note straight right heart border, concave waist, and prominence of the left heart border. Figure 4. Contour of Tetralogy of Fallot. Note the prominent right atrium, concave waist, "sheep nose" apex and prominence of the right base of the heart due to a right sided aorta.

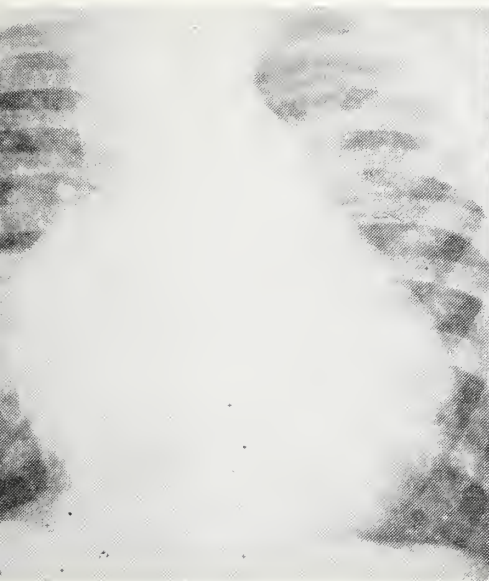


Figure 5

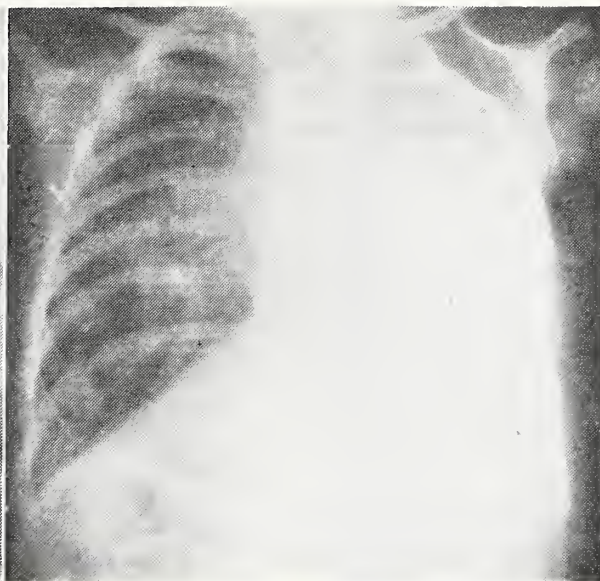


Figure 6

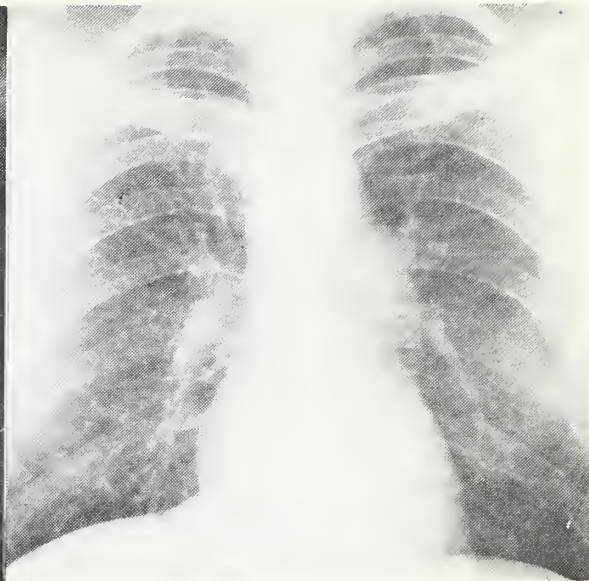


Figure 7

Figure 5. Contour of atrioventricular communis. The right atrium is huge. The increased lung vascularity in this patient differentiates this disease from Ebstein's anomaly. Figure 6. Aplasia of the left lung. The heart is shifted far to the left due to the lack of normal lung. The right lung vascularity is increased because it must carry all of the blood coming from the right ventricle. Figure 7. Pulmonary Stenosis. The pulmonary artery is dilated by the jet of blood passing through the stenotic pulmonary valve.

Dextrocardia may occur with or without total situs inversus and with or without chamber inversion. Congenital heart disease is far more common in isolated dextrocardia than in situs inversus. Isolated dextrocardia without chamber inversion is associated with congenital heart disease in approximately 98 per cent of the cases. Of these, 85 per cent are cyanotic and 15 per cent are not cyanotic. Tricuspid atresia is the most common associated defect in the cyanotic group.

PULMONARY ARTERY. The evaluation of the size of the pulmonary artery is a pertinent feature in the differential diag-

nosis of congenital heart disease. In pure pulmonic valvular stenosis with or without associated defects, the pulmonary artery is dilated. This is the so-called post-stenotic dilatation due to the force produced by the jet of blood passing through the stenotic valve (figure 7).

The pulmonary artery shows enlargement or prominence in those conditions which produce an active left to right shunt, e.g. patent ductus arteriosus, interatrial and interventricular septal defects. A hypoplastic

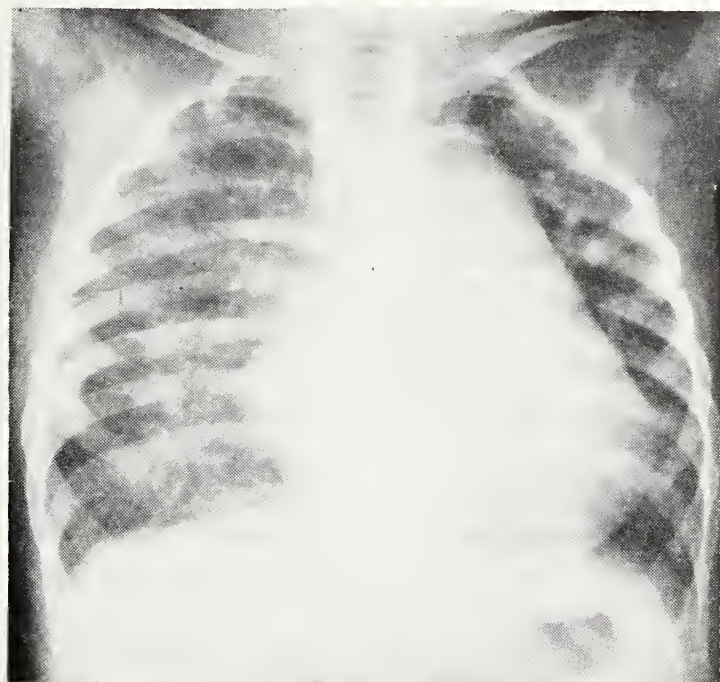


Figure 8. Marked increase in lung vascularity due to patent ductus arteriosus.

Charles E. Shopfner, M.D., graduated from the University of Kansas School of Medicine in 1949 and has since been certified by the American Board of Radiology. He is now Associate Professor of Radiology at the University of Oklahoma School of Medicine.

Doctor Shopfner is affiliated with the American College of Radiology, the Radiological Society of North America and the Pediatric Society of Radiology.

Genene Baker, M.D., a graduate of Creighton University School of Medicine, limits her practice to her specialty, radiology. At the time work was done on this paper, she was Assistant Professor of Radiology at the University of Oklahoma School of Medicine.

Doctor Baker is a member of the American College of Radiology.



Figure 9. Markedly decreased lung vascularity due to pulmonary atresia. Compare the lung vascularity with that of Figure 8.

pulmonary artery is produced by pulmonary infundibular stenosis, Ebstein's anomaly, tricuspid atresia, truncus arteriosus and pseudotruncus or pulmonary atresia.

LUNG VASCULARITY. By far the most important radiological feature is the status of the lung vascularity and any radiological classification of congenital heart disease is based upon whether the lung vascularity is increased or decreased. Both cyanotic and acyanotic conditions may produce increased lung vascularity and include interatrial and interventricular septal defects, patent ductus arteriosus, transposition of the great vessels and anomalous drainage of pulmonary veins (figure 8). Opposed to these are the lesions which cause decrease in the lung vascularity namely, pulmonary stenosis and atresia, Tetralogy of Fallot, tricuspid atresia and some types of truncus arteriosus (figure 9). However, in some instances lung vascularity is unaltered. Small septal defects need not show an increase in pulmonary blood flow radiographically. Some cases of pulmonary stenosis do not show diminution in lung vascularity. Coarctation of the aorta, of course, shows a normal vascularity as does fibroelastosis, the storage diseases and aortic stenosis.

Scrutiny of the lung fields may reveal an anomalous pulmonary vein running obliquely, inferiorly and medially to enter the inferior vena cava.

The difference between active and passive congestion, and thereby between congenital

and acquired heart disease, may be determined by close evaluation of the lungs. If the enlarged vessels have clear and sharply defined edges the congestion is active. If, on the other hand, there is poor outline and generalized haziness the congestion is passive. The presence of Kerley's B lines establishes the diagnosis of congestion of a chronic and passive nature usually secondary to rheumatic heart disease.

The origin of pulmonary vessels from a collateral supply such as in tricuspid atresia or pulmonary atresia sometimes may be recognized. In this instance, when the lungs receive blood from the bronchial arteries, well defined main hilar vessels are not present and the appearance of the vessels that are present is reticular and lace-like. Figure 10 shows a case of pulmonary atresia or pseudotruncus in which the bronchial arteries supply the blood to both lungs.

A fairly accurate estimation as to the presence or absence of pulmonary hypertension can be rendered also from the plain films. When pulmonary hypertension is present the vascularity is decreased peripherally but the central vessels are dilated. Figure 11 shows a typical case of pulmonary hypertension.

With hypoplasia or aplasia of one pulmonary artery, the opposite lung will show increased lung vascularity because this pulmonary artery must carry all of the blood coming from the right heart (figure 6).

AORTA. The aorta offers several clues to the etiology of congenital heart disease. In patent ductus arteriosus there is a large pulse pressure in the aorta causing it to show increased pulsations and to dilate. This is an important differential point between patent ductus arteriosus and ventricular septal defect. The aorta carries a smaller volume of blood in ventricular septal defect because of the left to right shunt and consequently is small and inconspicuous on the roentgenogram. Such a hypoplastic aorta is also seen in atrial septal defects.

With aortic stenosis a jet of blood escapes through the stenotic valve and causes post-stenotic dilation. This dilation is seen on the plain film as a prominent arch to the right of the spine.

Of course examination of the aorta is of the utmost importance in the diagnosis of coarctation. The aorta proximal to the coar-



Figure 10

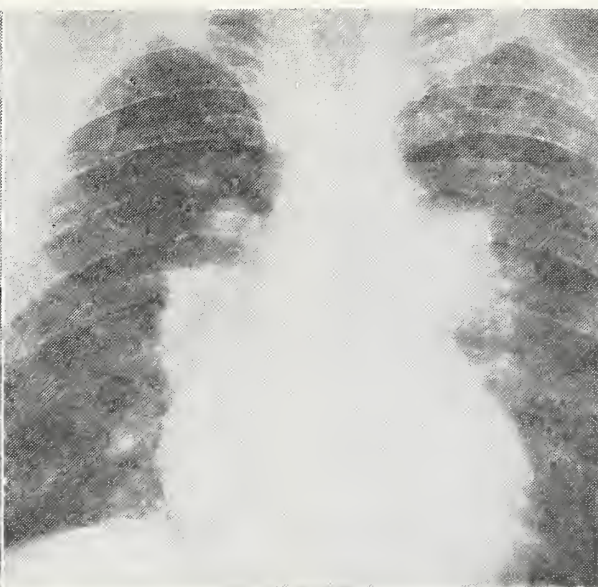


Figure 11

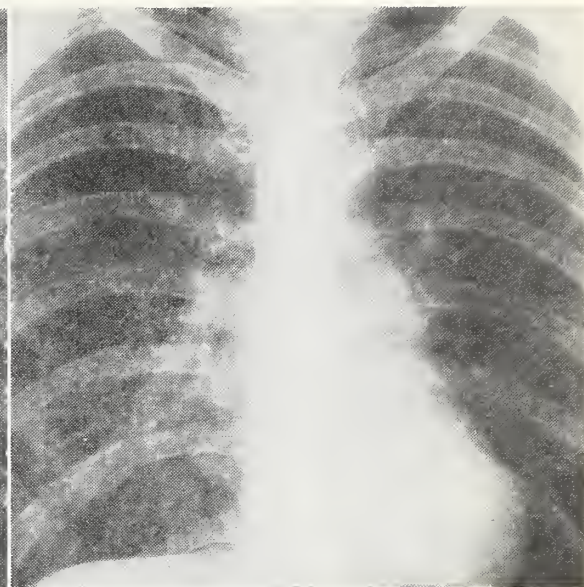


Figure 12

Figure 10. Collateral bronchial artery supply to the lung in a patient with pulmonary atresia. Note the lace-like, reticular pattern of the lung vasculature. Figure 11. Pulmonary hypertension. The main pulmonary artery and its proximal branches are greatly dilated. The medial portions of the arteries end abruptly, with the peripheral lungs being relatively avascular. This pattern is characteristic of pulmonary hypertension. Figure 12. Coarctation of the aorta with characteristic bilateral rib notching.

tation may be slightly dilated, then narrowed at the site of coarctation and normal to dilated beyond it. These findings have been referred to as the figure 3 sign.

OTHER THORACIC STRUCTURES. The other thoracic structures are important in coarctation of the aorta in which rib notching is present (figure 12). When the coarctation is proximal to the origin of the left subclavian or an anomalous right subclavian artery, the rib notching may be unilateral. Unilateral rib notching can be seen also in thrombosis of the anastomosis after a Blalock procedure.

The examples given above are by no means complete but serve to illustrate a method in which certain features of plain films are studied and lead either to the correct diagnosis or the correct differential diagnosis of lesions. Then, if necessary, other clinical

methods can be employed to demonstrate the exact nature of the heart disease.

SUMMARY

1. Every physician should be acquainted with the radiographic changes as seen in plain heart films of congenital heart disease.
2. An approach to the analysis of heart films is presented which should prove helpful to the general practitioner, internist, pediatrician, surgeon and radiologist.
3. Such an analysis of the radiographic findings in any given case should provide information which will serve either to make a specific diagnosis or as a building block in the completion of the final diagnosis.

800 N.E. 13th Street, Oklahoma City, Oklahoma

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Articles submitted and accepted for publication to the *Journal of the Oklahoma State Medical Association* are the sole property of the *Journal* and must not have been published elsewhere. The Editorial Board must approve all contributions, and reserves the right to edit.

Manuscripts should be typewritten, double-spaced and submitted in duplicate. Footnotes, bibliographies and legends for illustrations should be on separate sheets, double-spaced. Order of alphabetized bibliography: Name of author, Title of article, Name of periodical with volume number, Page and date of publication. *The Journal* will pay for a reasonable number of illustration engravings.

Primary Epidermoid Carcinoma of the Nasal Septum

KENNETH A. ROGERS, M.D.
ETHAN A. WALKER, JR., M.D.

Carcinoma of the nasal septum is extremely rare. The following case is especially unusual in that the malignancy developed in metaplastic epithelium rather than at the mucocutaneous junction.

THERE HAVE BEEN few reports concerning neoplastic tumors of the nasal septum. Epidermoid carcinoma is the one most frequently found in this area and, according to Gibb,⁵ was first reported by Hecker over a century ago. Gibb, in his review of the subject, found that seven patients having various types of septal carcinomas had been reported by 1902. It is not stated in his paper whether any of these tumors were primary of the nasal septum. In 1905, Beard¹ reported on a patient with a squamous cell carcinoma of the nasal septum. This tumor began in the vestibule at the mucocutaneous junction and extended posteriorly. Ridout⁸ in 1914 reported a patient having a carcinoma of the septum. At the initial examination the lesion covered the entire left side of the septum, making it impossible to determine the exact site of origin.

Ringertz⁹ reported 218 patients having squamous cell carcinoma of the nasal and paranasal cavities. He reported that 49.1 per cent of the tumors had their site of origin in the nasal cavity, but in only one patient the tumor was primary of the septum. This one also apparently originated at the mucocutaneous junction of the vestibule. There was a second case in which the tumor could have originated on the septum, but it was too extensive at the time of the initial examination to be certain.

Wille¹³ reported 162 patients having carcinoma of the nose and accessory sinuses but did not identify the location. In 1950, Sooy¹¹ reported on a patient with a primary septal carcinoma that extended "from the vestibule." Since that time there have been no further reports available to us of tumors involving the nasal septum.

Thus, much has been written concerning carcinoma of the nasal fossa. Lesions of the septum are rare, and those primary of the septum, not extending from the mucocutaneous junction of the vestibule, are reported even less frequently.

Following is a report of an epidermoid carcinoma that was primary of the nasal septum and did not originate in the vestibule.

REPORT OF CASE

This 57-year-old white male mechanic was admitted to the Oklahoma City Veterans Ad-

ministration Hospital on December 21, 1953, because of epistaxis. He gave a history of frequent intermittent bleeding from the right side of his nose for one week. During that period his nose had been packed on two occasions and cauterized on a third, each of which gave temporary relief. There was no history of hypertension.

Physical examination revealed the mucosa of the right side of the nasal septum to be normal in appearance anteriorly and inferiorly, including the portion adjacent to the vestibule, but rough, granular and slightly thickened in appearance high in the nasal fossa. On the left side of the septum the mucous membrane appeared smooth. The mucosa of the nasopharynx appeared slightly rough and injected, but otherwise normal. The remainder of the ear, nose and throat examination was normal except for slight thickening of the mucosa of the hypopharynx. The remainder of the physical examination was not remarkable except for moderate obesity. Roentgenograms of the chest were reported as normal. None were made of the paranasal sinuses, since they were normal by routine examination and the lesion was small and discrete.

The right nasal fossa was packed and the bleeding ceased within 24 hours. On December 30, 1953, small punch biopsies were taken from the thickened mucosa on the right side of the nasal septum. Microscopic examination of this tissue was reported: "Squamous cell metaplasia with Grade I squamous cell carcinoma, probably in situ."

Kenneth A. Rogers, Jr., M.D., graduated from the University of Oklahoma School of Medicine in 1961 where he is now serving a residency in E.N.T.

Ethan A. Walker, M.D., whose specialty is Otorhinolaryngology, has been certified by the American Board of Otolaryngology. He graduated from the University of Oklahoma School of Medicine where he is now Chairman and Associate Professor of the Department of Otolaryngology.

Doctor Walker is a Fellow of the American College of Surgeons, a member of the American Academy of Ophthalmology and Otolaryngology, the Oklahoma City Academy of Ophthalmology and Otolaryngology.

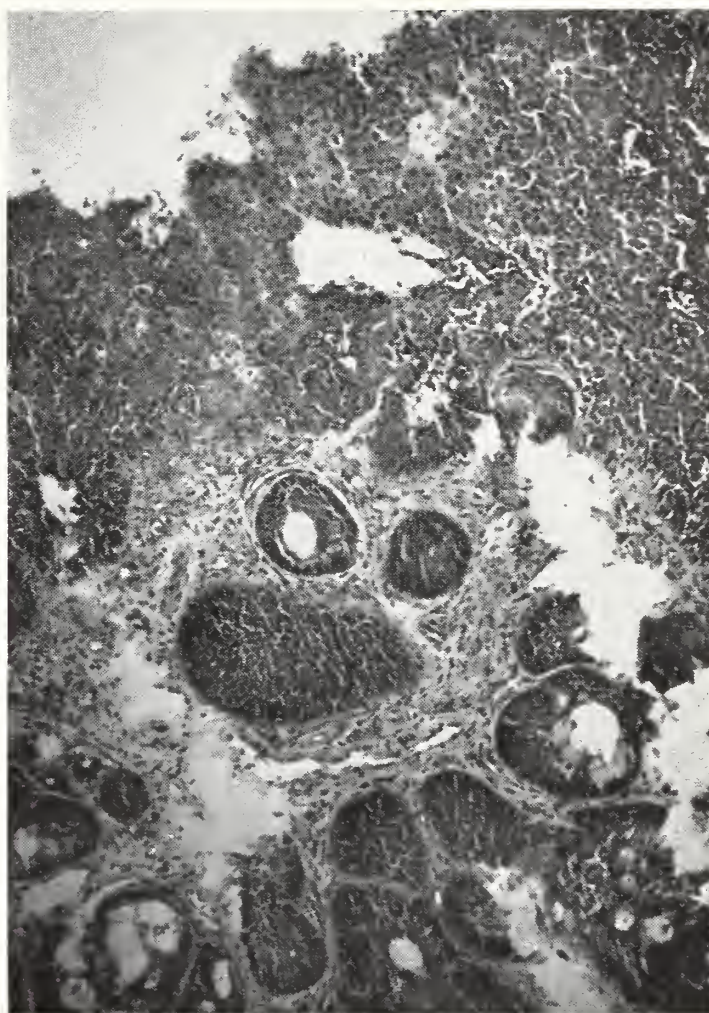


Figure 1. Section through the nasal mucosa demonstrating early epidermoid carcinoma (30 x).

On January 7, 1954, a larger piece of tissue was removed and microscopic examination showed: "Squamous cell carcinoma, Grade I, invasive."

Two weeks later, through a right lateral rhinotomy, a subtotal nasal septectomy was performed. The nasal septum was detached superiorly in the vault of the nose and adjacent to the columella anteriorly. The section was carried inferiorly and posteriorly to remove the septum and tumor mass en bloc. Bleeding was controlled by electrocoagulation. The thickened portion of the mucosa was easily distinguished from the remainder of the septum. Grossly, the surgical margins extended well beyond the thickened portion.

Microscopic examination of the specimen was reported: "Squamous cell carcinoma, Grade I, with only very early evidence of invasion in one or two areas." There was complete metaplasia of the mucous membrane on both sides of the nasal septum in all areas, the normal ciliated pseudo-stratified columnar epithelium having been replaced by squamous epithelium.

The postoperative course was uneventful except for recurrent crusting in the nasal fossae. The crusting diminished over a period of several weeks, and he was discharged from the hospital April 12, 1954, without evidence of recurrence.

The patient has been examined at regular intervals, and in February, 1963, no evidence of recurrence or metastasis was found.

The case presented is important from two aspects: first, the location of the primary lesion, and second, the nine year survival. This survival is due largely to early recognition of the malignancy. Devine, *et al.*,³ in discussing the small percentage of five year cures, emphasize early recognition: "For the patient who harbors a malignant tumor in this region (the nose) that causes symptoms early and thus receives vigorous . . . treatment early, the outlook is surprisingly good." More often, diagnosis is delayed and treatment is late and necessarily more extensive.

Tabb¹² states that early lesions are often overlooked. He believes that the usual textbook description is the picture of advanced disease, so physicians tend to have a low index of suspicion and treat patients symptomatically during the early curable stages. Also, he believes that the patients often delay seeking medical advice because their symptoms are similar to those of disease they have had for months or years, e.g., chronic sinusitis, allergic rhinitis, polypi and nasal obstruction.

Any physician who sees patients for complaints referable to the nose should know the symptoms of malignancy here and be so suspicious as to pursue appropriate diagnostic studies.

Schall¹⁰ lists the six most common symptoms of carcinoma of the nasal fossae and paranasal sinuses as:

1. Hemorrhage.
2. Nasal obstruction.
3. Pain referred to the teeth.
4. Painless swelling.
5. Paresthesia or anesthesia of the cheek.
6. Exophthalmos.

To this list a seventh symptom may be added:

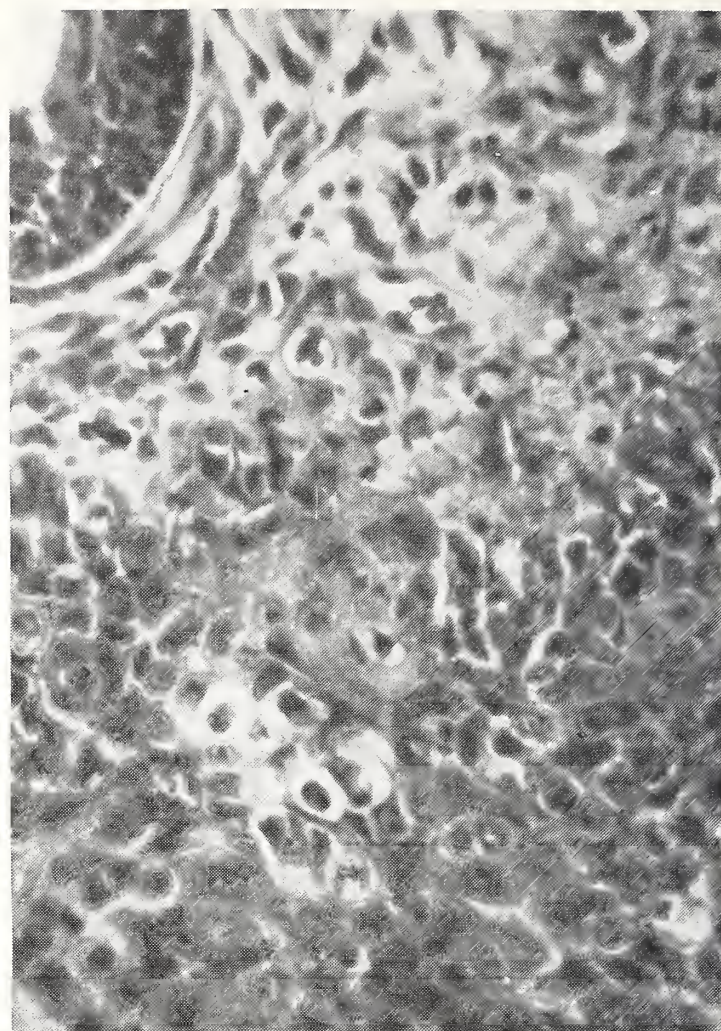


Figure 2. Cell arrangement of early epidermoid carcinoma (120 x).

7. Purulent nasal discharge.

There are three steps in diagnosis: office examination, roentgenographic examination and biopsy.

The office examination should include anterior and posterior rhinoscopy. Roentgenograms should include routine views of the paranasal sinuses, stereoscopic Waters views and laminograms where additional data is needed to evaluate the extent of the lesion. Views of the base of the skull should be made in extensive lesions to determine whether this structure has been invaded. Office biopsies are sometimes inadequate because of the small amount of tissue removed. Papanicolaou smears, though often quite informative, are helpful only when they are positive.

Twenty years ago, MacComb and Martin⁷ stated that low grade malignancies of the nasal cavity should be treated by surgical excision. Five years ago Devine, *et al.*, reiterated this concept, and it prevails today. Small, well-differentiated tumors in the nose are better treated with surgical excision, while extensive or highly anaplastic ones re-

quire a combination of excision and irradiation.

Electrosurgical techniques have been an important adjunct to the excision of these lesions. The excision must be wide and en bloc for treatment to be satisfactory. The lateral rhinotomy provided excellent exposure in this case.

Epidermoid carcinoma is the most frequent malignant tumor found in the nasal fossa and has its origin from the lining membrane of the fossa. Microscopic examination of this patient's tissue showed nasal mucosa that had changed from the normal respiratory epithelium to stratified squamous epithelium which then degenerated to squamous cell carcinoma. Capps² states that this metaplasia is quite common in older individuals, and it may be presumed that this is the first step in the formation of epidermoid carcinoma in this region. Eggston⁴ says that this metaplasia follows chronic irritation or infection, or the cause may be extension of squamous cells from a fistula or tooth socket. He thinks that the cells may also be part of a dermoid cyst or there may be a displaced squamous cell rest in the complicated embryologic development of the nasal structures. Another etiologic factor may be leukoplakia, which, though rare in the nasal cavity, has been reported.⁶

SUMMARY

Carcinoma of the nasal septum is rare and most of those reported in the literature available to us have been of the squamous cell, or epidermoid, type.

Primary carcinoma of the nasal septum

usually begins at the mucocutaneous junction in the nasal vestibule and spreads to involve the mucosal septum.

A patient having primary epidermoid carcinoma of the nasal septum has been presented. The malignancy began in metaplastic mucosa well removed from the nasal vestibule. This patient has survived nine years without evidence of recurrence following adequate excision.

The diagnostic and surgical principles pertaining to this lesion were discussed. The key to successful treatment is early recognition and adequate surgical excision.

We wish to express our indebtedness to Lawrence Knight, M.D., Department of Pathology, Veterans Administration Hospital, Oklahoma City, Oklahoma, for his valuable assistance with the microscopy. □

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- Kenneth A. Rogers, M.D.

800 N.E. 13th St., Oklahoma City, Oklahoma

PROFESSIONAL LIABILITY AND THE PHYSICIAN

A new AMA booklet, "Professional Liability and the Physician," is now available through the Oklahoma State Medical Association Executive Office, P. O. Box 18696, Oklahoma City.

The 28-page publication provides an excellent education for physicians on a subject of growing concern. Negligence is defined, principal causes of suits are covered in detail, points of laws are clarified, selection criteria and desirable provisions of professional liability insurance are explained, and "21 Commandments" for claims prevention are set forth.

Metranidazole (Flagyl) in the Treatment of Resistant Trichomoniasis

JED E. GOLDBERG, M.D.
HALL KETCHUM, M.D.
W. CARL LINDSTROM, M.D.

*At last, a treatment for trichomoniasis
that really works.*

IT IS UNNECESSARY to stress the need for an effective treatment of *Trichomonas Vaginalis* vaginitis. The countless dollars spent in heretofore futile therapy and the endless hours of misery and embarrassment suffered by patients certainly belie the "minor infection" categorization applied to this condition. Certainly no lives are lost but such is also true of the "common cold"!

The drug Metranidazole* has been the subject of many reports which have appeared in recent American and foreign literature with clinical and laboratory evaluations testifying to both the efficacy and safety of treatment.¹⁻⁵ This medication attempts to treat trichomoniasis systemically although a vaginal suppository is also available. The majority of reports have concerned treatment of consecutive patients with the infestation. We have been using Metranidazole since April, 1962 and have restricted its use to

resistant cases only in an attempt to have a more stringent criterion of efficacy.

MATERIAL

We are reporting a series of 75 patients all of whom had resistant cases of trichomoniasis. Metranidazole was not used as the primary treatment. Almost one-half of the patients had had the disease continuously for more than one year (table 1). Previous therapy ran the gamut of the gynecologist's armamentarium from vaginal instillation of powders, liquids, suppositories, etc., through cautery of the cervix, fulguration of Skene's ducts and D & C, to the desperation measure of hysterectomy! There were 58 married patients in the series. All husbands received concomitant therapy except for seven, six of whom refused and one of whom was in the army overseas. Three of these agreed to treatment after failure of the first course of therapy. To paraphrase, hell hath no fury like a woman with trichomoniasis and it seems quite simple to get husbands to accept treatment, especially if their wives have been afflicted for many years. Extra-marital contacts cannot, of course, be ruled out. Only two pregnant patients received treatment for reasons outlined below.

METHOD

The interval during which this material was collected covers two years. During this

*Supplied under the trade mark Flagyl by G. D. Searle and Co.

Duration of Infestation

Less than 1 month.....	1
1-3 months.....	16
4-6 months.....	8
7-12 months.....	13
1-5 years.....	19
6-10 years.....	13
Over 10 years.....	5

time there have been changes in the outline of clinical investigation by the manufacturer and by the Federal Drug Administration. For this reason the patients are divided into three groups:

Group I (41 patients): Vaginal cultures, using Kupferberg's *Trichomonas* medium² (five per cent human serum and one mcg/ml. of chloramphenicol), were obtained two weeks and six weeks following therapy. Of this group, 13 did not return for six-week follow-up.

Group II (15 patients): Initial work-up was done consisting of

1. Neurological examination (deep and superficial reflexes, cranial nerves, gait, balance and coordination).
2. White blood cell count, differential count, hemoglobin and hematocrit.
3. Urinalysis on clean voided specimens including specific gravity, color, ph, albumin, sugar, bile and microscopic examination.

Two weeks following treatment the entire work-up was repeated.

Group III (19 patients): These received the same work-up as Group II but, in addition, returned six weeks post-treatment for the identical examinations.

DOSAGE

Metranidazole was made available in the form of a 250 milligram oral tablet and 500 milligram vaginal suppository. A standard dose of 250 milligrams twice a day for ten days was used in all patients including husbands. In addition, during the early phases of investigation, the suppositories were used concomitantly in 34 patients. It was our opinion during the latter part of the study that the suppositories were superfluous although, unfortunately, we did not accumulate the statistical data to validate this.

Response to therapy was usually quite rapid with most patients reporting subjective relief within 72 hours. Needless to say, the individual comments especially after several weeks without recurrence, were quite dramatic. This was especially true in the women who had been living in less-than-peaceful co-existence with the trichomonad for many years. Following one course of treatment smears and cultures were negative in 69 patients, or 92 per cent of the 75. The six failures received a second course of treatment and three of these responded. One of the remaining three patients received a third course without response. The total number of cures was 72 or 96 per cent. The term "cure" is used somewhat guardedly since sufficient long-term follow-up has not yet been accumulated. Patients were considered "cured" if cultures following therapy were negative. Longer follow-up is available in 17 patients (table 2) of whom 14 are still free of the disease (ten by culture and four by smear only). One patient had a recurrence (re-infection?) 16 months following treat-

Jed E. Goldberg, M.D., a 1948 graduate of the University of Oklahoma School of Medicine, is certified by the American Board of Obstetrics and Gynecology. He is a member of the American College of Obstetrics and Gynecologists, the American College of Surgeons and is President of the Tulsa Obstetrical and Gynecological Society.

Since his graduation from Northwestern University School of Medicine in 1946, Hall Ketchum, M.D., has been certified by the American Board of Obstetrics and Gynecology. His professional affiliations include the American College of Obstetricians and Gynecologists, the American College of Surgeons and the Tulsa Obstetrical and Gynecological Society.

A 1934 graduate of the University of Oklahoma School of Medicine, W. Carl Lindstrom, M.D., has been certified by the American Board of Obstetrics and Gynecology. He is a member of the American College of Obstetrics and Gynecology and the American College of Surgeons.

All three authors are in private practice in Tulsa, Oklahoma.

Table 2
Longer Follow-Up

1-6 months	5
7-12 months	3
Over 1 year	9
Recurrences at 10, 14, and 16 months.	
Longest follow-up 20 months.	

ment; she is suspected of having homosexual contacts and points out the difficulty of differentiating recurrence of the disease from reinfection when evaluating long-term follow-up. The second patient with recurrence or reinfection fits the same pattern since she is a divorcee who is now pregnant. The third patient is married but her husband did not accept treatment; she required two courses of treatment initially and now has a recurrence after 13 months.

SIDE-EFFECTS

Subjective: No serious side-effects could be attributed to the medication and no patient stopped therapy because of them. The most common complaints were referable to the gastro-intestinal tract (24) and included nausea (7), dryness of the mouth (3), metallic or "acid" taste in the mouth (7), heartburn (1), "coated tongue" (4), and abdominal cramping (2). Interestingly enough, one patient stated that her "colitis," which had been present for many years, was completely relieved following Flagyl. One patient reported that her urine was dark during the treatment period. Another stated that she was "nervous and irritable" on treatment and one observed that her menstrual period was "three days late."

The total number of patients with the above possible side-effects was 19 or 25.3 per cent.

Vaginal: Seventeen patients complained of persistent leukorrhea and/or vaginal irritation. Fifteen cases showed positive cultures of other organisms and two had marked cervical erosions (table 3). All responded to definitive therapy. Vaginal cultures should be done before assuming that vaginitis is trichomonal in origin or that treatment has failed.

Pregnancy: It was stated that only two patients were treated during pregnancy. This was a result of the publicity and fear resulting from the Thalidomide episode plus one

Table 3

Vaginal Infections After Treatment	
Candida	8
Gamma strep	1
P. aeruginosa	1
Proteus	2
E. Coli	1
H. vaginalis	1
Micrococcus	1

case in which abortion occurred in a patient receiving the medication. Because of the possible implications, the case is reported in some detail:

Case Report on Mrs. B. B.

This 24-year-old gravida two para two was seen on 8-4-61 stating her last menstrual period had been 6-23-61. Examination limited to the pelvis disclosed a positive Hegar's sign, a normal appearing cervix, the uterine corpus in anterior position not enlarged and normal adnexa. A moderate trichomonas vaginitis was present. She was asked to return in ten days for re-examination for possible pregnancy, and because of the trichomonas vaginitis was given Floraquin® vaginal suppositories to use twice daily. She returned on 8-15-61 still not having menstruated. The Hegar's sign was still positive, the uterus was anterior, again not enlarged, and there was still a generous number of trichomonads present in the vaginal smear. She was given one cc. of Cyclogestrin as a provocative test for pregnancy and placed on Flagyl tablets b.i.d.

When next seen on 8-22-61 she had not menstruated under the stimulus of the Cyclogestrin. The uterus was anterior and enlarged to the size of six weeks' gestation. She was now eight weeks amenorrheic. The adnexa were normal to palpation. The general physical examination was normal.

On 9-5-61 she was seen in the office for uterine bleeding and cramping. The uterus was anterior and enlarged to the size of approximately six weeks. She was given Delalutine® 250 mgms. i.m. She aborted spontaneously on 9-7-61. The pregnancy was an apparent blighted ovum type of gestation. A curettage was done with uneventful recovery.

The other pregnant patient delivered a normal infant after an uneventful pregnancy. No conclusions can be drawn from one case and no similar cases have been reported to our knowledge.

Hemoglobin and hematocrit: No significant changes were noted either two or six weeks after treatment. Approximately one-half of the cases showed a rise and one-half a fall in hemoglobin. The greatest rise was 1.3 grams per cent and the greatest drop was 1.2 grams per cent.

Urinalysis: No significant changes were noted in any specimen. The one patient who complained of "dark urine" was, unfortunately, not included in the groups who had complete laboratory investigation.

White blood cell count: Changes in the total leukocyte count are difficult to evaluate over a short time interval because of extraneous factors such as the normal individual variation and the presence of other infection. Of the 34 patients with two-week follow-up investigation, 19 showed a drop in total white blood cell count of more than 500, nine a rise, and six were unchanged. Six-week follow-up in 19 patients showed a decrease in seven, an increase in three, and nine were unchanged. The most marked drop was 4,150. Two patients had a drop below the arbitrary lower limit of normal of 5,000; one count dropped from 8,200 to 4,300, the other from 7,800 to 4,700. Both returned to normal levels in four weeks. Differential counts in 33 patients showed no deviation from normal.

Neurological: No abnormalities were noted two or six weeks post-treatment.

DISCUSSION

A definitive cure for trichomoniasis has been a will-o-the-wisp for so many years that we embarked on this study with more than the usual scientific skepticism. After two years, however, pessimism has been replaced by overt acceptance and we feel that most patients with trichomoniasis need no longer run the gauntlet of therapy as in the past. The patient material was purposefully restricted to resistant cases in order to obtain candidates who had been unsuccessfully treated with various medications over a long period of time. The treatment schedule of 250 mgm. twice a day for ten days appears to be adequate and it is not felt that the vaginal suppositories are necessary as sup-

plemental treatment. Lyon, *et al.* have reported that the use of suppositories alone is not as effective as systemic treatment.³

Although the infestation may be acquired in various ways we believe that coitus is a prime method of re-infection. Unfortunately, trichomoniasis in the male is asymptomatic in most cases and it should be presumed that all husbands are carriers and should be treated concomitantly. In this respect, it is interesting that in none of the known recurrences or re-infections had the sexual partner received treatment. The results of treatment exceeded all expectation with a total bacteriological cure rate of 96 per cent. Three patients required a second course of therapy which was well-tolerated. Side-effects were minimal, transient and, most important, no patient felt that they were important or inconvenient enough to stop therapy. Toxicity studies were limited to the neurological, renal and hematopoietic systems. There appears to be a species-specific tendency to ataxia in dogs but no such effect has been reported in humans using a similar dose schedule and no deviation from normal was reflected in the neurological examinations in this series. No significant changes were seen in hemoglobin and hematocrit determinations. Urinalyses were also normal in every case. Examinations for bile were conducted because of reports of "dark" urine in some patients. One such complaint occurred in this series but, unfortunately, no laboratory studies were being done at the time that this patient was treated. Schram and Kleinman reported no change in liver function studies in 43 patients.⁵ Because Metranidazole is a nitroimidazole, a drug which occasionally causes depression of the white blood cell count, special attention was placed on this aspect of the follow-up study. It is extremely difficult to evaluate fluctuation in total white blood cell count unless serial studies are done and it is also difficult to ascertain what degree of fluctuation is significant. Five thousand was used as the low limit of normal and, by this criterion, two patients showed drops below normal. Repeat examination four weeks later showed a return to normal levels in both patients. We feel that after two years of experience with Flagyl that it is both effective and safe.

SUMMARY

1. Seventy-five patients with resistant trichomoniasis were treated with Metranidazole.

2. Complete laboratory work-ups were done in 34 cases with six week follow-up in 19. No significant changes were noted in hemoglobin, hematocrit, urinalysis, white blood cell counts and differential.

3. Nineteen patients showed a minor decrease in white blood cell count (more than 500). A drop below 5,000 occurred in two patients but both returned to normal within four weeks.

4. No neurological abnormalities could be demonstrated by examination.

5. Nineteen patients (25.3 per cent) reported side-effects possibly attributable to treatment. All were minor and transient and no patient stopped the medication because of them.

6. The bacteriologic cure rate was 92 per cent after one course of treatment. Re-treatment with one additional course in six pa-

tients resulted in a total cure rate of 96 per cent. Three patients did not respond to two or more consecutive courses of treatment.

7. Twelve follow-up examinations for over six months post-treatment revealed three recurrences or reinfections. In none of these patients had the consorts been treated.

8. Two pregnant patients were treated. A case report is submitted of one who aborted.

9. Metranidazole is the most effective method for the eradication of trichomoniasis that has yet been reported. It appears to have an acceptable degree of clinical safety. □

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Jed E. Goldberg, M.D.

Utica Square Medical Center, Tulsa, Oklahoma

Oklahoma Rheumatism Society

OCTOBER 27, 1963—9:00 a.m.-4:30 p.m.

DEL PRADO ROOM—SHERATON-OKLAHOMA HOTEL

MORNING SESSION

John A. Blaschke, M.D.—Moderator

9:00 A.M.-9:30 A.M.

REGISTRATION

9:30 A.M.-10:00 A.M.

BUSINESS MEETING

10:00 A.M.-10:30 A.M.

ULTRACENTRIFUGE PATTERNS
OF RHEUMATIC DISEASES

Charles Cahill, Ph.D.

Oklahoma City University

Oklahoma City, Oklahoma

10:30 A.M.-11:00 A.M.

ARTHRITIS POT-POURRI

A. A. Hellbaum, M.D.

Ardmore, Oklahoma

11:00 A.M.-12 NOON

BAASTRUP ABNORMALITY OF
SPINE

Glenn Clark, M.D.

University of Tennessee

Memphis, Tennessee

AFTERNOON SESSION

John A. Blaschke, M.D.—Moderator

12:30 P.M.-2:30 P.M.

LUNCH

With Question and Answer
Period

2:30 P.M.-4:30 P.M.

PANEL DISCUSSION ON
"SURGERY IN ARTHRITIS"

James P. Bell, M.D.

Oklahoma City, Oklahoma

Don H. O'Donoghue, M.D.

Oklahoma City, Oklahoma

S. Y. Andelman, M.D.

Tulsa, Oklahoma

J. Vernon Luck, M.D.

Los Angeles, California

Glenn Clark, M.D.

Memphis, Tennessee

The Pickwickian Syndrome

ROBERT DARRYL FISHER

A discussion of the manifestations and pathophysiologic mechanisms of the alveolar hypoventilation syndrome in the massively obese individual.

INTRODUCTION

IN 1837, an elaborate and colorful description of an obese subject with dyspnea and somnolence was made by Charles Dickens in his book, "The Posthumous Papers of the Pickwick Club."¹ As though he were a physician with diagnostic acumen, Dickens described the association of these symptoms in the characterization of Mr. Pickwick's servant, Fat Joe, who was a "fat and red-faced boy in a state of somnolence." He further elaborated Fat Joe's traits as "Young Dropsy," "Young Opium Eater," and "Young Boa Constrictor" in reference to his marked obesity, somnolent appearance and ravenous appetite.

In spite of this early observation, no critical investigation of this problem had been carried out, and the clinical association of obesity, somnolence, and dyspnea was known only vaguely to clinicians for more than a century. With the recent development and application of various pulmonary function tests in clinical medicine, attention has been

gradually focused on the physiological as well as the clinical features of the markedly obese patient with cardiopulmonary disturbances.

Auchincloss, *et al.*^{2,3} and Sieker, *et al.*⁴ in 1955, and Burwell, *et al.*⁵ in 1956, observed that the main features of this syndrome include marked obesity, somnolence, periodic respiration, intermittent cyanosis, secondary polycythemia, myoclonic twitching, electrocardiographic evidences of right axis deviation and of right ventricular hypertrophy and ultimately right ventricular failure. Because of the vivid description of this syndrome by Dickens, Burwell, *et al.*⁶ proposed the name of "Pickwickian Syndrome" for patients with this symptom complex. More recently, numerous clinical and physiological investigations⁷⁻³⁸ have been made in an attempt to clarify the basic mechanisms responsible for the genesis of this syndrome. The purpose of this paper is to review the previous observations critically and to discuss the pathophysiology of this multiphasic problem.

CLINICAL FEATURES

Hitherto, 49 well documented cases of Pickwickian syndrome have been reported in the literature.^{2,3,5,7,8,12,13,15,17,20,23,26,27,29,32,35,37,43} Sixty-five per cent of these patients were between 30 and 60 years of age with approximately one-half of this number being between 30 and 40 years of age. Males outnumbered females in the ratio of about seven to one.

SYNDROME / *Fisher*

The patient with this syndrome usually consults his physician with a chief complaint of dyspnea.¹² As in other forms of chronic pulmonary disease, the present illness is often triggered by a recent upper respiratory infection.^{26, 44, 45} Frequently, the patient admits a recent rapid weight gain,¹⁶ but mostly they have been quite obese for a considerable period of their lives. The patient also has a history of marked drowsiness which may even interfere with his daily activities.⁵ Breathing is characterized by periods of tachypnea alternating with apnea^{20, 41} superficially resembling Biot's respiration; these irregular periodic respirations were seen in approximately 91 per cent of the reported cases. Estes¹⁶ observed that the periodicity of breathing is accentuated with recumbency. The intermittent cyanosis, also occurring more markedly with recumbency, was observed in about 95 per cent of the reported cases.

Physical examination reveals a markedly obese patient who tends to fall asleep as if he had taken a soporific before the examina-

tion.⁵ The facies is often ruddy and cyanotic. The neck veins are distended. Respiratory excursion of the thorax is limited.³³ There may be difficulty in outlining the cardiac silhouette and in auscultation of the heart sounds because of obesity. Fine rales are usually present in both lung bases. The abdomen is markedly protuberant and renders palpation of visceral organs difficult. Pedal and ankle edema is very often present. Neurological findings consist of lethargy, somnolence and myoclonic twitching.^{5, 17, 41, 43}

Roentgenologic examination of the chest reveals a heart enlarged in its transverse diameter with accentuation of pulmonary vascular markings; however, primary parenchymal changes are usually absent.^{2, 5, 8, 15, 16, 23, 26, 33, 35, 39, 40, 42, 43} The diaphragm may be elevated.^{16, 23, 38}

The hematocrit was greater than 55 per cent in 74 per cent of the cases and the hemoglobin was greater than 18 gm/100 ml. in approximately 50 per cent of the reported cases; however leukocytosis was not observed. The remainder of the hemogram was essentially normal. Lillington, *et al.*²⁶ found the blood volumes to be significantly increased. Circulation time was prolonged.^{5, 7, 33, 41}

LUNG VOLUMES OF NORMAL SUBJECT
AND PICKWICKIAN PATIENT

NORMAL

(taken from Comroe, *et al.*)

TOTAL LUNG CAPACITY 6.0 L.	VITAL CAPACITY 4.8 L.	INSPIRATORY CAPACITY 3.6 L.	INSPIRATORY RESERVE VOLUME 3.0 L.
			TIDAL VOLUME .6 L.
	RESIDUAL VOLUME 1.2 L.	FUNCTIONAL RESIDUAL CAPACITY 2.4 L.	EXPIRATORY RESERVE VOLUME 1.2 L.
			RESIDUAL VOLUME .12 L.

PICKWICKIAN SYNDROME

(average values of 49 patients)

TOTAL LUNG CAPACITY 4.9 L. (-18.3%)	VITAL CAPACITY 3.1 L. (-35.4%)	INSPIRATORY CAPACITY 2.7 L. (-25.0%)	INSPIRATORY RESERVE VOLUME 2.28 L. (-24%)	TIDAL VOLUME ←42 L. (-30%)
	RESIDUAL VOLUME 1.6 L. (+33.3%)	FUNCTIONAL RESIDUAL CAPACITY 2.2 L. (-8.3%)	RESIDUAL VOLUME 1.6 L. (+33.3%)	←EXPIRATORY RESERVE VOLUME .6 L. (-50%)

Figure 1. Lung volumes of normal subject and Pickwickian patient. (Modified from Comroe, *et al.* *The Lung*. Year Book Publisher, 1955.)

PULMONARY FUNCTION TESTS

Pulmonary Volumes:

As shown in figure 1, total lung capacity, vital capacity, inspiratory capacity, inspiratory reserve volume, tidal volume and expiratory reserve volume decrease significantly. The average decrements ranged respectively 18.3 per cent, 35.4 per cent, 25.0 per cent, 24.0 per cent, 30.0 per cent and 50.0 per cent of average normal values. Residual volume was increased markedly by 33 1/3 per cent of normal values. Functional residual capacity remained almost unchanged.

Pulmonary Ventilation:

Respiratory rate was above normal in the reported cases with a range of 12-36 breaths per minute and an average of 25 per minute. Tidal volume was diminished to an average of 70 per cent of the normal values. Although minute ventilation was reported to be elevated above 12 liters per minute by Lillington, *et al.*²⁶, Pedersen, *et al.*²⁹ and Scaletter, *et al.*,³² other investigators^{5, 16, 20, 39} report essentially normal values for minute ventila-

tion. There was a consistent alveolar hypoventilation in all the cases, as manifested by arterial hypoxemia and hypercapnia (see below). Burwell, *et al.*⁵ found the respiratory dead space to be increased to 372 ml.; other workers^{8, 18, 31, 35} have observed an increase in the physiologic dead space as evidenced by uneven ventilation-blood flow relationships.

Pulmonary Circulation and Ventilation-Blood Flow Ratios:

Pulmonary arterial pressure was significantly increased in those cases in which catheterization studies were performed^{2, 12, 16, 20, 43}; the average pressure was 68/30 mm. Hg. Likewise, the pulmonary capillary blood pressure was also elevated^{20, 43} at an average level of 11 mm. Hg. Uneven ventilation-perfusion relationships have been demonstrated by Said, *et al.*,³¹ Carroll, *et al.*,⁸ Counihan, *et al.*,¹⁸ and Lillington, *et al.*²⁶

Diffusion Capacity of Lungs:

Auchincloss, *et al.*,² Pedersen, *et al.*²⁹ and Burwell, *et al.*⁵ have found the diffusion capacity of the lungs to be within normal limits without evidence of alveolar capillary block.

Mechanics of Breathing:

The maximal breathing capacity was reduced to an average of 65 liters per minute in the reported cases, or to approximately 50 per cent of normal values.

Blood Cases:

Arterial oxygen saturation exhibited a range of 30-95 per cent in the reported cases with an average of 74 per cent saturation. Arterial carbon dioxide tension was increased markedly with a range of 46-117 mm. Hg. and an average of 70 mm. Hg.

DISCUSSION

A. CAUSATIVE MECHANISMS OF PICKWICKIAN SYNDROME

The causative mechanisms responsible for the genesis of this syndrome have been studied rather extensively. Although several theories have been proposed to explain its processes, there still remains a great deal of controversy among the investigators as to which factor plays the greatest role in the production of the syndrome.

In the accompanying diagram (figure 2), the causative mechanisms of the Pickwickian syndrome have been delineated. It is im-

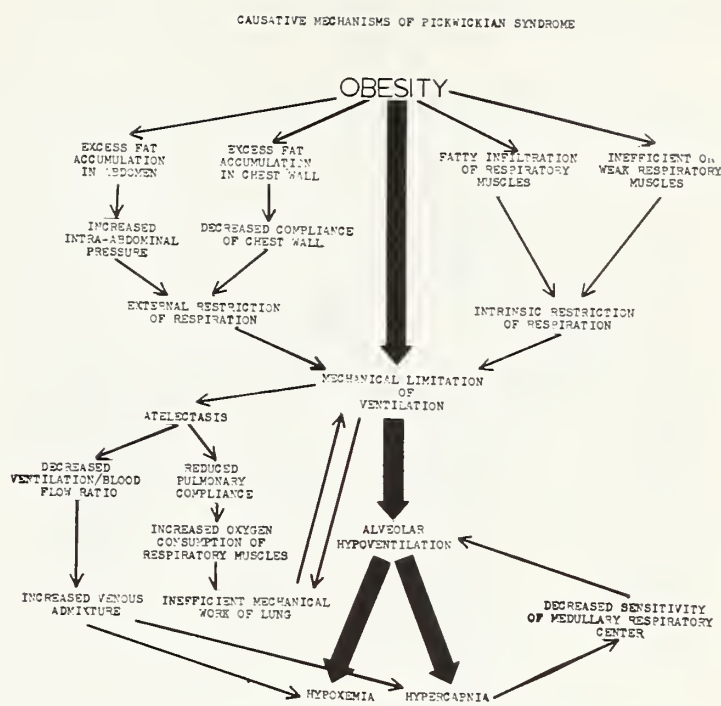


Figure 2. Causative mechanism of Pickwickian syndrome.

probable that any factor except obesity is the primary causal agent in these patients. The obesity results in an internal and external mechanical limitation to ventilation and alveolar hypoventilation thereby ensues. Secondary phenomena do occur, but they are the results of the alveolar hypoventilation and not its cause. Thus, atelectasis occurs in many of the Pickwickians as a result of the mechanical limitation, and indeed atelectasis does serve to perpetuate the hypercapnia by altered perfusion-ventilation relationships. Likewise, the carbon dioxide retention on the basis of hypoventilation serves to desensitize the respiratory center and to result in further hypoventilation.

The hypoxemia and hypercapnia developing from the alveolar hypoventilation eventuate in a series of systemic alterations as outlined in figure 3. As an ultimate result of these blood gas alterations, secondary polycythemia, right ventricular failure, and a variety of neurological manifestations occur.

Multiple pathophysiological changes occur in the Pickwickian syndrome, and these alterations have been proposed by various investigators to contribute by a greater or lesser degree to the clinical pattern.

I. Mechanical Limitation of Ventilation

Thoracic Factors:

The chest and accessory respiratory structures function as a giant bellows, effectively sucking air into the lungs on inspiration

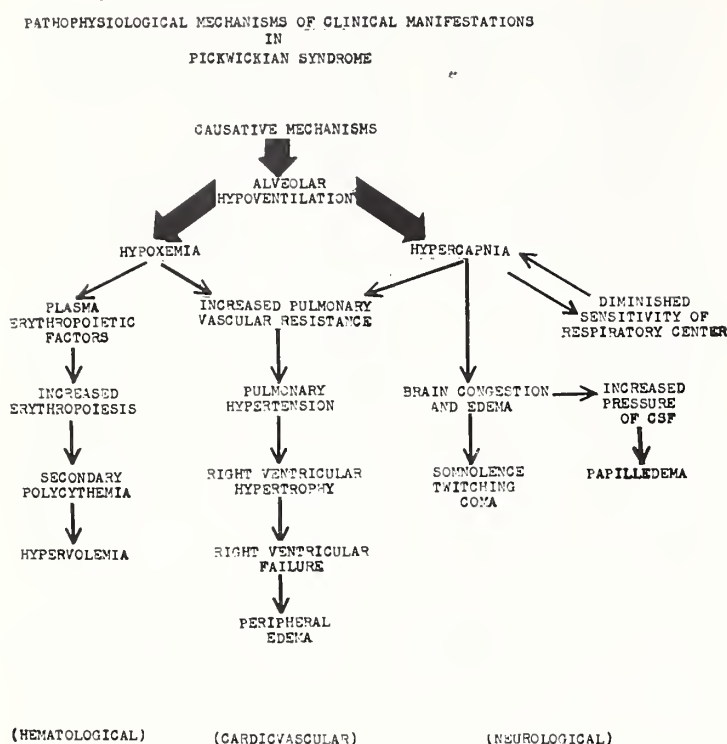


Figure 3. Pathophysiologic mechanisms of the clinical manifestations in the Pickwickian syndrome.

when intrapleural pressure is decreased by the expansion of the thorax. On the other hand, expiration reverses the process and is due to passive movements of the thorax. The mechanism of respiration is dependent upon functioning respiratory units i.e., muscles of respirations, nerve supply and reflex nervous activity. An ineffective bellows action of the chest can occur in neuromuscular diseases which involve any of these respiratory units.^{46, 47, 48} In these conditions of marked ventilatory restriction, the respiratory rate rises disproportionately to decrements in the tidal volume, while minute ventilation remains relatively constant (see figure 4).⁵ When sufficient ventilation fails to occur, the decreases in tidal volume and minute volume are reflected in decrements in arterial oxygen tension and blood pH and in increases in arterial carbon dioxide tension.⁴⁹ Excessive accumulation of fat in the thorax in the Pickwickian patient may result in insufficient respiratory excursion by a girdle-like action. This stiffness of the chest wall may also contribute to alveolar hypoventilation by rendering the bellows action partially ineffective.^{7, 8}

Feltman⁴⁷ observed alveolar hypoventilation in a patient with chronic calcific pleuritis and noted a reduction of all lung vol-

umes. Caro, *et al.*⁵⁰ applied a pneumatic restrictive vest to human subjects, thereby preventing complete thoracic expansion, so that significant decreases in lung capacity and its subdivisions occurred in association with an unevenness of alveolar ventilation. These illustrations indicate that physical restrictions of the thoracic cage are capable of producing significant diminution in lung volumes and ventilation.

Abdominal Factors:

The protuberant abdomen and lumbar lordosis associated with excessive obesity may increase the intra-abdominal pressure and inhibit respiratory excursion of the diaphragmatic muscles, thus interfering with adequate ventilation.⁵¹ Abelman, *et al.*⁵² found that in patients with massive ascites, the mechanical limitations imposed by increased abdominal distension resulted in ventilatory insufficiency with decreases in total lung capacity and its subdivisions. Cugell, *et al.*⁵³ demonstrated that enlargement of the abdomen due to the gravid uterus is accompanied by reductions in the expiratory reserve volume, residual volume and the functional residual capacity. In patients with the obesity-hypoventilation syndrome, Hackney, *et al.*²² found that intra-abdominal pressures in obese patients were consistently 10-15 cm. of saline greater than in non-obese patients and corresponded closely with the

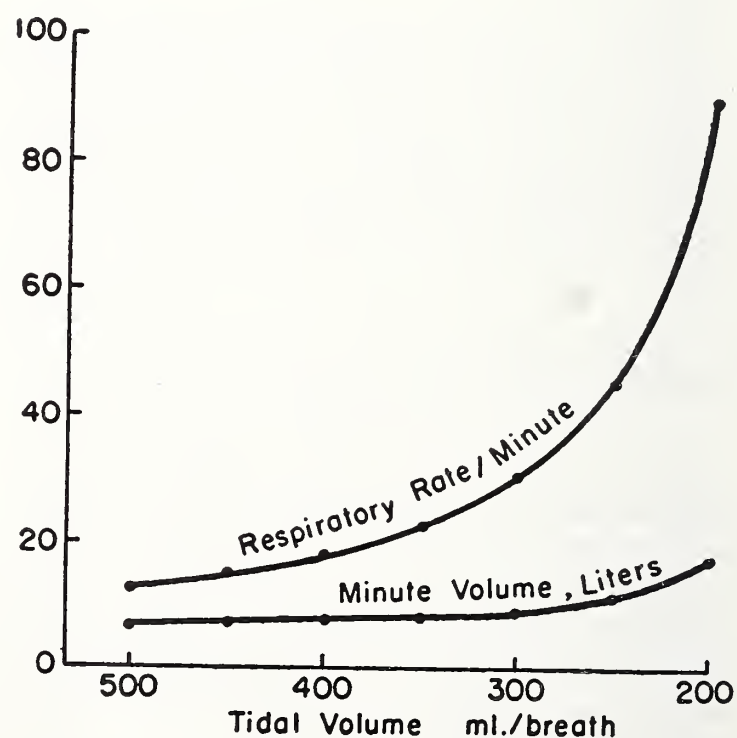


Figure 4. Calculated respiratory rate and minute volume necessary to maintain a constant alveolar ventilation as tidal volume decreases. (From Burwell, *et al.* Am. J. Med., 21: 811, 1956.)

degree of obesity (see figure 5). Tucker and Sieker³⁶ observed that obese patients exhibited a significant decrease in all lung volumes except residual volume and that the expiratory reserve volume became even smaller and more slowly ventilated when in the recumbent position. This observation could well account for the frequently observed phenomenon of cyanosis with recumbency in the Pickwickian patient. Thus, increased intra-abdominal pressure, regardless of etiology, seems to compromise the lung capacity and pulmonary ventilation.

It is apparent that both of the above factors *i.e.* decreased bellows action of the chest and increased intra-abdominal pressure, contribute in large measure to the development of alveolar hypoventilation in the Pickwickian patient. These two factors are obviously induced by obesity and its resultant mechanical limitation to ventilation.

II. Atelectasis

It has been commonly observed that hypoventilation is one of the predisposing factors to the development of pulmonary atelectasis in senile or postoperative patients.⁵⁴ Mead and Collier⁵⁵ noted a progressive reduction of compliance in the anesthetized dog when he was allowed to breathe spontaneously or was subjected to forced deflation. McIlroy, *et al.*⁵⁶ observed a significant reduction in lung volumes and pulmonary compliance when chest strapping was placed on normal subjects. Both investigators similarly postulated that these decreases may be due, in part, to the closure of alveolar air spaces *i.e.*, atelectasis. Ferris and Pollard⁵⁷ showed that quiet breathing resulted in a compliance reduction, a phenomenon which was essentially reversible by deep breathing. Similar to the above workers, they ascribed the cause of the reduction of compliance to opening and closing of various units within the lung.

Naimark and Cherniak²⁸ demonstrated that obesity is accompanied by a reduction in the compliance of the total respiratory system, and this reduction in compliance is due

Robert Darryl Fisher is a senior student in the University of Oklahoma School of Medicine. His paper, The Pickwickian Syndrome, won first prize at the annual Walter Reed Memorial Essay Competition of the Brooklyn Hospital.

INTRA-ABDOMINAL PRESSURE INCREASES WITH OBESITY

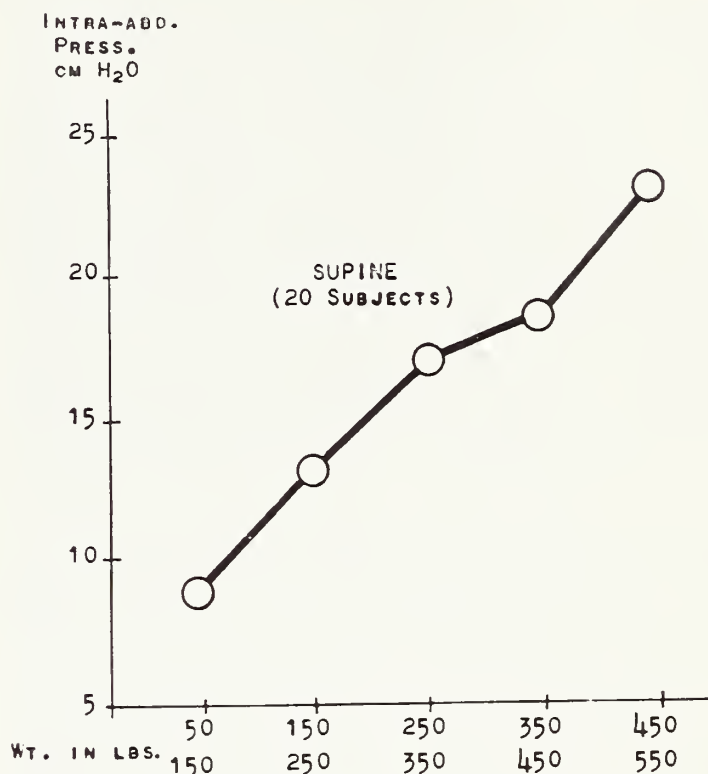


Figure 5. Intra-abdominal pressure and expiratory intragastric mean values of 20 supine subjects plotted against body weight group (100 pound weight groups from 50-550 pounds were used). (From Hackney, *et al.* Ann. Int. Med., 51: 541, 1959.)

almost entirely to an increase in the elastic resistance to distension of the chest wall in obese individuals. Moreover, in the reported autopsy findings of clinically established Pickwickians^{8, 13, 33} there have been noted areas of focal atelectasis. This observation points out the presence of hypoventilation in this syndrome. The mechanism for the production of these focal areas of atelectasis may be similar to that previously observed by chest restriction and by increased intra-abdominal pressures.

It seems clear that atelectasis is not the direct cause of hypoventilation in this syndrome as postulated by Said³¹ but is simply the consequence of hypoventilation as seen in other conditions associated with hypoventilation. However, atelectasis undoubtedly disturbs the ventilatory function of the lungs and reversely alters the ventilation-blood flow ratio.⁴⁹

III. Defective Respiratory Mechanics

Lillington, *et al.*^{26, 27} and Hackney, *et al.*³² generally agree that there is an increase in the work per unit of ventilation based upon the mechanical effects of obesity. Kaufman,

*et al.*²⁵ arrived at a similar conclusion based upon increased oxygen costs of ventilation in a group of obese subjects, and he noted fairly consistent elevation of work of ventilation in obese subjects; in addition, it was noted that there was a tendency for the highest oxygen cost of breathing to be associated with the lowest arterial oxygen tensions and the highest arterial carbon dioxide tensions. Butler, *et al.*⁵⁸ have demonstrated by means of intra-esophageal pressure transducers and by measurements of volume changes that the work of pulmonary ventilation is the least at approximately the normal resting respiratory level. However, below the normal resting level of ventilation, as occurs in the Pickwickian, the work of breathing increases. This increased work is due mainly to an increase in the viscous component of work. The viscous component of work performed represents the amount of work required for moving non-elastic tissues and in overcoming airway resistance. On the other hand, the elastic component of work is that fraction of the total work performed which succeeds in overcoming the elastic recoil of the pulmonary unit and in propelling air through the tubular passages.⁴⁹ Thus, in the Pickwickian syndrome there is an increased oxygen cost of breathing which is related to the presence of heavy and restrictive fat deposits and/or to the lower resting ventilatory level.

Cherniak and Guenter¹⁰ present contrasting data derived from pulmonary function studies on obese patients which suggest that the work done to overcome elastic resistance was actually no greater in obese subjects than in normal subjects. It is felt by them that the increased oxygen cost of breathing in obesity is due to inefficient respiratory muscles rather than to an increased amount of work required to overcome elastic resistance. However, they concede that this inefficiency of respiratory muscles in obese patients may well be due to decreased chest wall compliance or to the lower lung volume at which ventilation took place. The proposition that the basic defect might be due to inefficient or weak respiratory muscles is strengthened by Fadell's¹⁷ recent observation of massive fatty infiltration of the dia-

phragm and intercostal muscles in a clinically established Pickwickian.

IV. Other Postulated Factors

Auchincloss, *et al.*⁶ and Sieker, *et al.*¹ feel that the inherent and conditioned sensitivity of the medullary respiratory center figures prominently in the causative mechanisms of the Pickwickian syndrome. It is postulated by them^{4, 6} that the observed elevation of total resting ventilation/body mass in obese subjects is a compensatory mechanism. This increase in ventilation offsets the increased metabolism common to obesity and probably is also compensatory to the increased body gas stores. Moreover, because such ventilatory compensation is not always complete, hypercapnia and hypoxemia occurred. In other words, in subjects with an inherent diminished sensitivity of the respiratory center, the development of obesity may augment the need for gaseous exchange to such an extent that demands could not be met by the medullary centers, and a relative alveolar ventilation could ensue as evidenced by arterial hypoxemia and hypercapnia. This mechanism may well be operative in the Pickwickian, but such a view ignores the previously observed physical restrictions to respiration.

Said,³¹ Carroll,⁸ and Spier and Karelitz³⁵ postulate that shallow breathing and consequent hypoventilation can result in areas of atelectasis in patients with this syndrome. Since the blood continues to flow in the capillaries of alveoli which are not well aerated in the atelectatic lungs, a physiological shunt or increased venous admixture occurs with enhanced arterial hypoxemia and hypercapnia.⁴⁹ The magnitude of this factor was shown by the fact that inhalation of pure oxygen could not always render full hemoglobin saturation in patients with this syndrome.^{8, 31, 35} This mechanism of focal atelectasis may certainly play a role in some of the manifestations of this syndrome but it is not the direct or important factor in its genesis.

Cullen and Formol¹⁴ feel that the obesity-hypoventilation syndrome is not due to a single recognizable disturbance in respiration but rather is due to a complex combination of factors e.g., low expiratory reserve volume, airway obstruction, and uneven ventilation-perfusion relationships, all of which compromise respiratory function. In this manner, further burdens imposed on respira-

tion could precipitate the hypoventilation syndrome. This attitude seems to emphasize more of the results of hypoventilation and tends to underemphasize the cause of hypoventilation. A similar, all-inclusive approach is assumed by Weil and Prasad³⁸ who believe that the production of this syndrome is the result of the mechanical disadvantage to respiration created by fat deposits, as well as the result of increased total body metabolic requirements and decreased effectiveness of respiratory musculature.

From the foregoing discussion, it can be discerned that the author's opinion is that obesity is the direct and principal factor in the development of the Pickwickian syndrome, because even with moderate weight reduction there is marked amelioration of both the clinical and laboratory abnormalities.^{5, 8, 12, 16, 26, 29, 38, 40, 43} However, the major pathophysiological mechanism which is triggered by obesity and which is responsible for the various manifestations encountered in the patient with this syndrome is alveolar hypoventilation. The exact determinations of the alveolar hypoventilation seem to be multiple but all have obesity as the common basis (see figure 2). Other minor factors related directly or indirectly to obesity and hypoventilation operate to produce the florid picture of the Pickwickian (see figure 3).

B. PATHOPHYSIOLOGICAL MECHANISMS OF VARIOUS MANIFESTATIONS IN PICKWICKIAN SYNDROME

The causative mechanisms of this syndrome, as outlined previously, contribute to the production of hypoxemia and hypercapnia. These biochemical alterations of the blood constituents and subsequent abnormalities in the tissues can lead to hematological, cardiopulmonary and neurological manifestations.

I. Hematological Manifestations

Erythrocytosis is known to occur when there is diminished oxygen saturation of the arterial blood resulting from decreased atmospheric pressure or from impaired pulmonary ventilation. Lawrence, *et al.*⁶⁰ in studies in the Peruvian Andes demonstrated that hypoxia produces secondary polycythemia; they propose an augmented erythropoiesis to explain the increased number and volume of erythrocytes in response to the decreased oxygen tension of the inhaled air. Linman and Bethel⁶⁰ postulate that the pri-

mary regulatory mechanism which governs erythropoiesis is most likely dependent on the relationship between the oxygen supply available and the metabolic requirement of some as yet undetermined tissue. The erythropoietic stimulant is mediated to the myeloid elements by the plasma erythropoietic factors and the site of production of these plasma factors may well be the kidneys. It seems that similar mechanisms which are secondary to hypoxic hypoxia are operative in the production of polycythemia in the Pickwickian individual, but in this instance the hypoxia is induced by alveolar hypoventilation.

It has been shown by various investigators^{8, 31, 35} that shunting of blood through atelectatic areas occurs in the Pickwickian individual and this phenomenon contributes to the hypoxemia and resultant secondary polycythemia. Whether the Pickwickians represent polycythemia rubra vera or not is resolved by the fact that there is no reported hepatosplenomegaly or significant leukocytosis in any of the cases in the literature.

Thus, it is a combination of mechanisms that results in hypoxemia, and this anoxic stimulus serves as the factor inducing erythropoiesis through pathways not definitely established at present.

II. Cardiovascular Manifestations

It has been observed that hypoxemia regardless of etiology results in pulmonary arteriolar constriction thereby increasing pulmonary vascular resistance. Liljestrand, *et al.*,⁶¹ Motley, *et al.*,⁶² and Wescott, *et al.*⁶³ found that hypoxemia induced by breathing five-ten per cent oxygen in normal subjects always resulted in increases in pulmonary vascular resistance and in pulmonary hypertension. Hypercapnia and hypoxemia operate synergistically in effecting an increase in pulmonary arterial pressure. The effect of oxygen deprivation on pulmonary vasculature is much stronger and will be the main factor in effecting pulmonary hypertension when there is simultaneous hypercapnia and hypoxemia.⁶¹

As illustrated by Cournand,⁶⁵ anoxia serves to trigger the chain reaction which results in chronic cor pulmonale. Two factors, blood flow and pulmonary vascular bed size, are determinants of pulmonary arterial pressure. The capacity of the pulmonary vascular bed appears to be a more important determinant

ventricular output in the normal individual are adequately compensated by pulmonary vasodilation to maintain normal pulmonary arterial pressure. However when the pulmonary vascular resistance is high and relatively fixed, the absolute level of pulmonary arterial pressure will increase as the cardiac output increases.

In a hydraulic model, the resistance to laminar flow is directly proportional to the viscosity of the medium and the length of the system, while inversely proportional to the fourth power of the radius. Although not precisely true for the biologic system, this relationship demonstrates the principle that the resistance (and hence pulmonary arterial pressure) rises disproportionately to small decrements of arteriolar radius.

Therefore, it is reasonable that according to the above data chronic hypoxic effects may result in pulmonary arteriolar constriction with resultant high pulmonary arterial pressure. The secondary polycythemia induced by the hypoxemia may play a role in producing pulmonary hypertension because the increased hemotocrit increases the blood viscosity. As can be seen from the previous relationship, increased viscosity augments the resistance to flow through the pulmonary circuit and adds to the pulmonary arterial hypertension. Thus, as a result of the constantly elevated pulmonary pressure, the work of the right ventricle increases and a compensatory hypertrophy ensues. Eventually decompensation of the right heart occurs, and the patient experiences right heart failure manifest as edema, hepatomegaly and increased venous pressure. This decompensation frequently develops shortly after the onset of an upper respiratory infection, possibly due to the increased burden on the strained right ventricle.^{44, 45}

III. Neurological Manifestations:

The neurologic manifestations observed in the Pickwickian syndrome are usually attributed to hypercapnia, as is true in other forms of severe pulmonary insufficiency.^{73, 74}

Generally, in patients with longstanding hypercapnia, the principal respiratory drive is mediated by the anoxemia detected by chemoreceptors in the carotid and aortic bodies.⁵⁴ The medullary respiratory centers than blood flow, because increases in right

are no longer sensitive to carbon dioxide stimulation and these patients depend solely upon arterial oxygen tension for the respiratory stimulus. It has been observed by Gotzsche *et al.*,²⁰ Burwell *et al.*,⁵ and Auchincloss *et al.* that there is a diminished sensitivity of the respiratory center to carbon dioxide inhalation in the Pickwickian patient. It is apparently this diminished sensitivity of the medullary respiratory center which permits an excess of carbon dioxide to accumulate until it surpasses a critical level. At this point tachypnea replaces the intervening apnea²⁰ giving rise to a periodicity resembling Biot's respiration.

Undoubtedly, the sensorial aberrations in the Pickwickian find a common etiology with those observed in other forms of chronic carbon dioxide retention. The sensorial changes in carbon dioxide narcosis include drowsiness, lassitude, confusion, disorientation, forgetfulness, irritability, somnolence and depression.^{41, 66, 73, 74} Sieker *et al.*⁶⁶ and Westlake *et al.*⁶⁸ observed that inhalation of high levels of carbon dioxide will produce a pattern of neurologic changes in normal subjects similar to that seen in patients with chronic pulmonary insufficiency. These investigators have also shown that the mental status is closely correlated with the arterial carbon dioxide tension and pH. Westlake *et al.*⁶⁸ postulate that carbon dioxide may influence activity of the central nervous system, by interfering with certain enzyme systems through changes in acid-base balance.

Motor disturbances frequently seen in the Pickwickian as well as other forms of chronic carbon dioxide retention include tremors, weakness and twitching. These motor abnormalities are probably subcortical, as carbon dioxide has been shown by Pollock⁶⁹ to be a cortical depressing agent. These motor changes and the electroencephalograms in chronic hypercapnia are similar to those observed in hepatic coma.⁷⁰ Dutton *et al.*⁷¹ have observed elevated blood ammonia levels in the emphysematous patient even without cardiac or hepatic dysfunction. This increase in blood ammonia is thought to be due to the effect of chronic hypoxemia on the liver's ability to metabolize ammonia and to the impairment of excretion of ammonia via the lungs due to hypoventilation.⁷¹ It is possibly this mechanism of ammonia elevation that

is also responsible for the twitching so frequently observed in the Pickwickian individual.

Simpson⁷² has observed that papilledema and associated signs of increased intracranial pressure i.e., headache, nausea, and vomiting, occur frequently in patients with severe emphysema. Also, it has been observed that in patients dying of carbon dioxide retention there is increased brain weight due to congestion and edema.^{41, 67} The most plausible explanation for this is on the basis of hypoxemia and hypercapnia both of which, but especially the latter, produce cerebral vasodilation, decreased cerebral vascular resistance, and increased cerebral blood flow.⁶⁴ Thus, with increased cerebral blood flow and the subsequent congestion and edema, there is a concomitant rise in cerebrospinal fluid pressure giving the typical symptoms. It seems probable that in the more severe forms of the Pickwickian syndrome with very high levels of carbon dioxide retention,^{41, 42} the increased cerebrospinal fluid pressure plays an important role in producing the symptomatology.

All of these neurological manifestations are usually reversible, and with a reduction in arterial carbon dioxide tension, the signs and symptoms induced by hypercapnia will readily subside.⁷³

SUMMARY

The clinical features of the Pickwickian syndrome have been reiterated as massive obesity, somnolence, periodic respirations, intermittent cyanosis, myoclonic twitching, secondary polycythemia and ultimate right ventricular failure.

Forty-nine well documented cases of this syndrome have been reported in the literature. An analysis of these case reports revealed reductions in all of the lung volume subdivisions except residual volume.

A discussion of the various theories concerning the causative mechanisms of the Pickwickian syndrome is presented. It is concluded that the basic defect is massive obesity which physically restricts ventilation, and thereby alveolar hypoventilation supervenes.

A theoretical analysis of the pathophysiologic aspects of the various clinical manifestations is outlined. The hematologic re-

sponse of secondary polycythemia, the cardiovascular response of cor pulmonale and the neurological response of somnolence and twitching, all find a common basis with other entities exhibiting hypoxemia and hypercapnia.

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800 N.E. 13th, Oklahoma City, Oklahoma

OSMA SCHOLARSHIPS PRESENTED

On September 9th, 104 freshmen medical students began training at the University of Oklahoma School of Medicine, and five of them received \$500 tuition scholarships from the Oklahoma State Medical Association.

Receiving the awards were: Johnny H. Jones, Jr., Shawnee; William Wilson Wallace, Jr., Ardmore; Robert Boyd Livingston and Gene Clark Cunningham, Oklahoma City and Don Allen Wilson, Blackwell.

OSMA scholarships are given on the basis of scholastic achievement during premedical training, and are designed to generally encourage and reward academic excellence in medicine. They are made possible through earmarking a portion of OSMA dues for scholarships, loans and grants-in-aid.

Current Concepts in the Management of the Pregnancy Complicated by Rh Isoimmunization*

WARREN M. CROSBY, M.D.

Erythroblastosis remains a significant cause of stillborn babies in Oklahoma. With newer methods of obstetrical management, many of these can be prevented.

THE DISCOVERY of the Rh factor and establishment of its relationship to erythroblastosis has led to a remarkable improvement in prognosis for the Rh sensitized pregnancy. During the past 15 years, mortality from erythroblastosis in live born babies has fallen from 20 per cent to two per cent. There has not, however, been a parallel fall in the incidence of stillbirths. The success with live born babies has been due to the use of exchange transfusions. Premature delivery has been introduced as a means of decreasing the number of intrauterine fetal deaths, but it was found that many infants so delivered, though live born, succumbed to prematurity.¹ It is apparent, however, that the appropriate time for delivery in these patients should be that time when the disease has progressed to the point

at which extrauterine existence would offer a better chance of survival than that offered by continued intrauterine life. The problem, therefore, is not *whether* premature delivery is indicated, but *when* to accomplish this. This problem is due to the inability to predict accurately the presence and severity of fetal anemia before birth.

The purpose of this article is to review the present knowledge of the pathologic physiology of isoimmunization and to relate this knowledge to the clinical management of sensitized patients. A new technique that promises to be of value in the prediction of fetal anemia will be discussed.

PATHOLOGIC PHYSIOLOGY

In the United States, approximately 13 per cent of marriages are Rh incompatible (Rh-positive husband, Rh-negative wife). However, isoimmunization will develop in only five per cent of these Rh-negative mothers as a result of exposure to the Rh-positive cells of their fetus. Because the process of sensitization takes time, and because major transfer of fetal blood cells into the maternal circulation does not occur until delivery, the first pregnancy is rarely sensitized. Once sensitization has occurred, however, each subsequent exposure to Rh-positive cells will increase the rate of antibody formation. As a result, each subsequent

*From the Department of Gynecology and Obstetrics, University of Oklahoma School of Medicine, Oklahoma City.

Rh-positive infant carried by an Rh-sensitized woman generally will be more severely affected.

When antibodies are formed, they pass the placental barrier with ease, and cause hemolysis of the fetal red blood cells. If the fetal organs of hematopoiesis cannot keep pace with the rate of hemolysis, a progressively severe anemia develops. This in turn may produce cardiac failure, with edema, hydrothorax and ascites (*hydrops fetalis*), a development that almost invariably leads to the death of the infant. As long as the infant is delivered before the development of hydrops, it is potentially salvable by exchange transfusion. This technique has three purposes: correction of anemia, and the removal of circulating antibodies and toxic products of blood destruction. Before delivery, some of the circulating antibodies become fixed to fetal tissues. After delivery and initial exchange transfusion, these fixed antibodies are mobilized and the hemolysis continues. As a result, several exchange transfusions may be necessary in severely affected infants.

During intrauterine existence, potentially toxic products of blood destruction (primarily indirect-reacting bilirubin) are removed by the placenta and excreted by the maternal organism. Because of this maternal clearing, even severely affected infants are not jaundiced at birth. Following separation from the mother, however, the infant's liver must dispose of these products. Since the liver of the newborn infant is relatively lacking in the essential enzyme systems necessary to convert indirect bilirubin to the excretable form, direct bilirubin, the serum level of indirect bilirubin increases rapidly and jaundice develops. Furthermore, at serum levels higher than 15 to 20 mgm. per cent, indirect bilirubin may be precipitated into various tissues of the body, notably the basal ganglia. This produces kernicterus, a condition fatal or hopelessly crippling to the infant. There is no known treatment for kernicterus once developed, but prevention by exchange transfusion is usually successful.

Thus it would appear desirable to induce labor at the first sign of hemolysis and anticipate salvage by exchange transfusion.

However, because hemolysis often begins early in pregnancy, delivery too far before term would result in an infant too immature to survive. If, on the other hand, the obstetrician tries to avoid prematurity, he may allow the fetus to remain *in utero* too long, with resultant development of irreversible heart failure. What is needed, therefore, is a test that will allow him to assess the severity of the disease while the infant is still *in utero*, so that induction of labor may be accomplished at a time when the infant has the best chance for survival.

DIAGNOSTIC AIDS

1. *Previous Obstetrical History*

The patient's previous history offers the obstetrician a guide in the management of the present pregnancy. Walker and Murray¹⁰ have stated that if an Rh-negative sensitized mother has had one previous still-born or hydropic baby, the chance that her next baby will be born alive and treatable are one in nine. If she has lost two or more, this drops to one in 100. These figures alone apparently indicate that radical treatment is justified if one is to have any hope to offer these women. These authors induce labor in patients with one previous fetal loss in the 34th to the 35th week of pregnancy and those with two or more fetal losses at the 32nd to the 34th week. In 25 per cent of the latter group, the fetus already will have died by the 32nd week, but of those infants still alive at this time, 50 per cent will survive outside the uterus with expert pediatric care.³

There are, however, two major disadvantages of utilizing only the previous obstetrical history in the management of the Rh-sensitized pregnancy. First, it would be necessary for the patient to have lost an infant or to have had one severely affected in order to use the history to time induction of labor. Secondly, the nearly 50 per cent occur-

A graduate of the University of Kansas School of Medicine, Warren M. Crosby, M.D., limits his practice to his specialty, Obstetrics and Gynecology. He is presently Assistant Professor of Gynecology and Obstetrics at the University of Oklahoma School of Medicine. Doctor Crosby is a member of Alpha Omega Alpha.

rence of a heterozygous father renders this scheme totally unreliable if followed blindly.

2. Rh Typing of Husbands and Previous Children

This diagnostic test is of value in managing the Rh-sensitized pregnancy because it allows the obstetrician to calculate the chances of obtaining an Rh-negative and therefore unaffected baby. If any one of the husband's previous children is known or found to be Rh-negative, no further testing is necessary. He is heterozygous, and the chances of the present fetus being Rh-negative are 50 per cent. If all of the previous children are Rh-positive, or are unavailable for typing, the husband should have the test, utilizing all of the available antisera. Table 1 illustrates the manner in which the reactions thus obtained allow prediction of his zygosity. If he is found to be homozygous, all of his children will be Rh-positive.

Table 1

Presumptive Determination of the Common Rh-Positive Genotypes

(Adapted from Table 10, Ortho Manual, "Blood Group Antigens and Antibodies")

Reactions with Antisera					Presumption of Genotype
Anti-D	Anti-C	Anti-E	Anti-c	Anti-e	
+	+	O	+	*	94% Heterozygous
+	+	O	O	*	95% Homozygous
+	+	+	+	*	87% Homozygous
+	O	+	**	+	94% Heterozygous
+	O	+	**	O	85% Homozygous
+	O	O	**	*‡	97% Heterozygous

(*Test with Anti-e not necessary)
(**Test with Anti-c not necessary)
(‡Negroes with this reaction will usually be homozygous)

This table is based upon per cent incidence of the various genotypes. Inference must be made as to the true genotype, because antisera to d are not available. However, for all practical purposes, the persons reacting in the above manner may be assumed to be of the genotype predicted.

3. Determination of Antibody Titers

Several methods for this measurement have been devised, but it is now established that the indirect Coomb's titer, when done by a reliable laboratory, is the most accurate in general use.⁵ Kelsall's figures, utilizing the Coomb's technique, relate the titer to fetal salvage:

Table 2

Maternal Titer at Term	No. of Cases	Liveborn Lived	Rh-Positive Died	Stillborn	Corrected % Fetal Loss
1:64 or less	60	59	0	1*	0
1:128	30	28	1	1**	3.3
1:256	60	53	5	2	11.7
1:512	70	62	4	4	11.4
1:1024	82	46	9	27	43.9
1:2048 and up	71	26	15	30	63.4

*Mongoloid
**Anencephalic

In this report, Kelsall states that his practice is to induce labor at the 35th to 36th week if the titer is 1:512 or higher, at the 37th to 38th week if the titer is 1:128, and at term if the titer is 1:64 or lower. There are, however, disadvantages in this regimen as well. Even in the most experienced laboratory, the normal error in any one serum determination may be a two to three tube dilution. Thus, apparent increases or decreases of this magnitude may mean nothing. Furthermore, titers in most highly immunized pregnancies lie in the upper middle range and tend to remain fairly constant throughout pregnancy, regardless of the Rh status of the fetus. This test is more useful in the first sensitized pregnancy, when its accuracy in detecting isoimmunization and correlation with the severity of the hemolysis is quite acceptable. In subsequent pregnancies, however, this accuracy drops off. Furthermore, the occurrence in occasional cases of the "anamnestic response" (the development of a gradual or abruptly rising titer in the presence of an Rh-negative fetus) has resulted in premature induction of labor and subsequent death of Rh-negative babies. In other cases, the presence of gross maternal edema has apparently been responsible for diluting the titer to less alarming levels.⁷

In summary, the use of the previous obstetrical history, along with the antibody titers, is of great value in the management of the Rh-sensitized pregnancy, but the rate of fetal loss, even under the best circumstances, is theoretically reducible. The inadequacies of the above diagnostic aids result from the fact that all are *indirect* methods. They measure only the maternal responses and enable us only to guess at their effect on the fetus.

4. Use of Spectral Absorption Curves of Amniotic Fluid

Recently there has been an attempt to

develop a more *direct* method for estimating the presence or absence of hemolysis in the fetus. Bevis² has recently studied the normal chemical constituents of amniotic fluid obtained by amniocentesis. He noted that there were unusual amounts of pigments in the fluid from Rh-negative sensitized women who later delivered babies with hemolytic disease. His analyses of the various constituents showed them to be ones commonly associated with blood destruction, i.e., free hemoglobin, free iron, bilirubin, coproporphyrins and various heme pigments. He was able to correlate certain of his determinations with fetal outcome, but these were not accurate enough to be used clinically.

Walker³ noted that the spectral absorption curves of these fluids have better correlation with fetal outcome than did the study of the chemical constituents. This curve is obtained by measuring the optical density of the fluid at various wave lengths of light. The wave lengths selected are those in the yellow-green range (350 to 700 millimicrons) because the pigments are of this color. The results are plotted on semi-logarithmic graph paper. It is felt that all of the blood pigments in the fluid are measured by this technique, and that individual analyses, a difficult task, is not necessary. Examples of various curves are illustrated in figure 1.

These spectral absorption curves show a reproducible difference in patients with affected infants when compared to those who had normal babies at birth. It became apparent that the hemolytic process in the fetus produces the usual pigments which, in spite of placental clearing, diffuse into the amniotic fluid, presumably in proportion to their rate of formation. In the first reported clinical use of this test, Walker had surprisingly good results. After gaining experience with this technique, he found that the accuracy of the test was 95 per cent. In the 61 cases where the test was done prior to the 35th week of pregnancy, the prediction was correct in 59. In the remaining two cases, the prediction that the infants would be unaffected was inaccurate only in that they were Rh-positive and had Coomb's positive cord blood but neither infant required exchange transfusion.

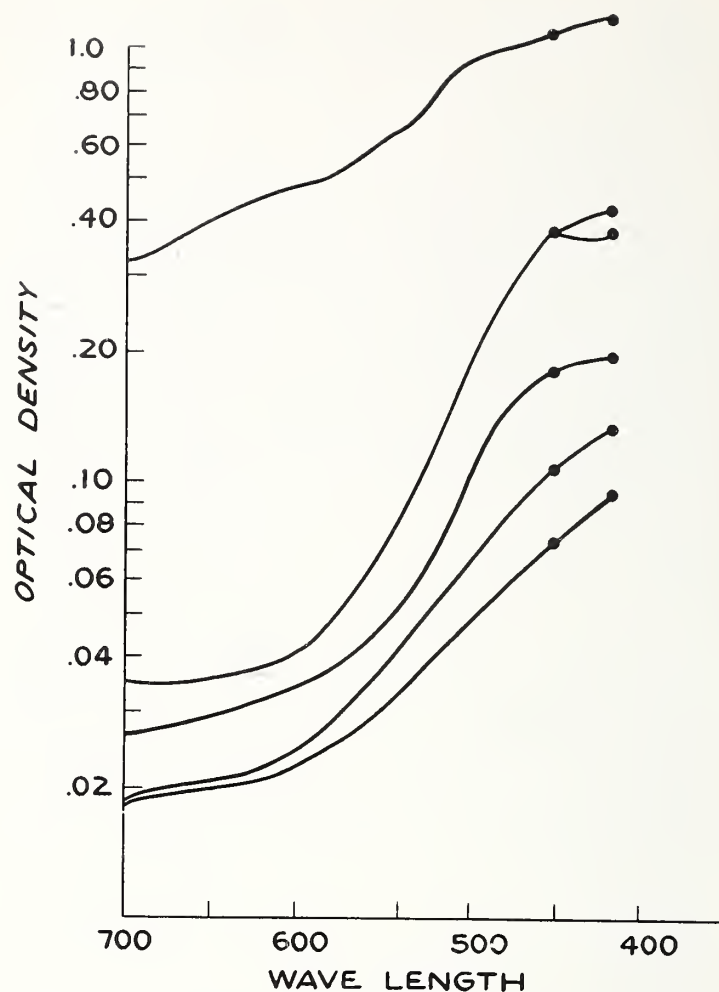


Figure 1. Representative spectral absorption curves of amniotic fluid from Rh sensitized patients.

Upper Curve: From a severely sensitized patient at 34 weeks. The baby, born three days later, was severely anemic (cord hemoglobin 8 gms. per cent), but not hydropic.

Middle Two Curves: Taken from one patient, the lower curve at 32 weeks, the upper one at 37 weeks. Titer was 1:64 throughout the pregnancy. The baby, delivered at 37 weeks, was moderately anemic (cord hemoglobin 11 gms. per cent), but survived with exchange transfusion.

Second from Bottom: From a patient with a titer of 1:512 at 34 weeks. The baby delivered at 38 weeks, was mildly anemic (cord hemoglobin 14.6 gms. per cent). No exchange transfusion was required.

Lower Curve: From a patient sensitized by blood transfusion. Titer 1:256 throughout the pregnancy. Baby Rh negative.

Two reports demonstrating the effectiveness of this test have recently originated from Australia and New Zealand. Townsend⁸ reported a series of 352 Rh-sensitized pregnancies. Amniocentesis played a role in the management of many of these patients. He divided them into three groups, based upon their previous obstetrical histories.

Group 1: There were 207 patients in whom antibodies had appeared for the first time, or in whom previous pregnancies had resulted in mildly affected infants. Under

his management, these patients were delivered at term unless the indirect Coomb's titer had reached 1:64 or higher. If this occurred, labor was induced in the 37th week. There were 24 Rh-negative babies delivered, none of whom were lost. Of the 183 Rh-positive infants, 15 (eight per cent) died. Over half of these were induced prior to term, and only one was considered too badly affected to have been salvaged.

Group 2: Of 87 patients in whom previous infants had required exchange transfusions but survived, 23 delivered Rh-negative babies. None of those were lost. Induction of labor was done at 37 weeks regardless of titer. In the last two years of the study amniocentesis was used, and all patients having normal curves were allowed to go to term. Of the 64 Rh-positive infants delivered, 11 (17 per cent) were lost. Of these, six were considered too badly affected to have been salvaged.

Group 3: This group consists of 58 patients who had lost a baby previously to erythroblastosis. Twelve of those delivered Rh-negative babies, none of whom were lost. This group of patients were induced at 37 weeks, or one week prior to the gestational age of the previous fetal loss, whichever was the earlier date. In addition, the spectral absorption curve was utilized to indicate the unaffected (Rh-negative) babies, which were allowed to deliver at term. Those in whom the curve indicated severe hemolysis were induced prior to the 37th week.

The mother's observation of decreasing vigor of the fetal movements was also used as a basis for earlier induction. Of the 46 Rh-positive infants delivered, 25 (54 per cent) died, and 15 of those were considered too badly affected to have been salvaged.

Taking the series as a whole, the salvage rate is probably the best reported to date, yet it is apparent that the authors feel they can do still better. Comparing their results with those of an American study,⁴ comparable groups one, two and three lost 22 per cent, 55 per cent and 77 per cent, respectively. There was a 15 year spread in the time covered by this study, however, and the techniques of treatment and use of premature induction of labor varied from the earlier to later years.

Liley⁵ presented a series of 101 Rh-negative patients, all of whom had amniocentesis.

Although he did not feel that his series was large enough to tabulate survival figures, he points out several observations that are of great value in interpreting the spectral absorption curve.

First, he showed that even though the curve must be fully constructed, the outcome of the pregnancies correlated best with the height of the 450 mu peak, the peak attributed to indirect bilirubin.

Secondly, he showed that when the fluids from affected babies were exposed to direct sunlight, the peaks disappeared and the resultant curve was indistinguishable from a normal one.

The third observation was that the 450 mu peak diminished in all samples from normal patients as the pregnancy advanced. After making this observation, he repeated the amniocenteses on many patients with abnormal curves, and compared the 450 mu peaks of the initial with the later sample. He found that if the 450 mu peak diminished with the passage of time, the infant was less likely to be severely affected than if it had increased. He interprets this as meaning that those infants with diminishing peaks are keeping up with the hemolysis, while those with increasing peaks are losing ground. This, then, would seem to show that at least two amniocenteses are necessary. The trend of the 450 mu peak, correlated with the week of gestation in which it was obtained, would then indicate the presence or absence of hemolytic disease, and its relative severity. With this information, the necessity and urgency for premature delivery could easily be deduced.

Possibly one of the most practical contributions of this author was the demonstration that the amniocentesis could be performed safely by any physician. The fluid thus obtained was protected from light and mailed to the laboratory. The fluid was then analyzed and a report returned to the physician. He pointed out, however, that the presence of a "normal" curve did not mean that the patient could be delivered at home, or in a poorly equipped hospital, because the test cannot distinguish the mildly affected fetus from one completely unaffected. The infant with no anemia but with a positive Coomb's reaction (who would have a "normal" curve) may rapidly develop jaundice

Rh ISOIMMUNIZATION / Crosby

and the need for exchange transfusions soon after delivery.

TECHNIQUE OF AMNIOCENTESIS

In most cases, amniocentesis is a fairly easy procedure, with almost no risk to the mother or fetus. The patient should first empty her bladder. Abdominal preparation is the same as for any paracentesis. No anesthesia is necessary, but local may be used. The site chosen for introduction of the needle should be below the umbilicus, and over the small parts of the fetus, or in the area between the head and the shoulders. A #22 spinal needle of three inches in length is introduced, aiming towards the center of the uterus. The needle is slowly advanced until the hub of the needle prevents further progress. If any obstruction to easy passage is encountered, the needle should not be advanced further. The obturator is then removed and a 20 cc syringe is attached to the needle. Aspiration is then attempted, but if no fluid is obtained, the needle should be rotated 180°. If still no fluid is obtained, the needle should be slowly withdrawn, while applying suction. As soon as clear fluid is obtained, 10-15 cc. are removed and the needle withdrawn. If blood is encountered at any time, the needle should be removed immediately and flushed with saline. Further attempts should be made at another site, usually nearer midline and lower on the abdomen. It is quite safe to introduce the needle anywhere in the lower quadrants as long as no obstruction is encountered. Occasionally with low lying, anterior placentas, the needle must be introduced into one of the upper quadrants. If two or three attempts are unsuccessful, it is best to discontinue the effort for the time being. Frequently it will be successful a few days later.

Because there is always some contamination by a few red blood cells, the fluid should be centrifuged for ten minutes soon after it is withdrawn. The supernatant fluid is then poured off and placed in a plastic or glass tube that is protected from light. The patient should be observed for any untoward reactions (fainting, contractions, nausea, etc.) for an hour or two, after which she

may be allowed to return home. In the nearly 600 amniocenteses so far reported, no significant maternal or fetal complications have occurred that were directly attributable to the tap itself.

The analysis requires a research type spectrophotometer, with a range of wavelengths from 350 to 700 millimicrons. The fluid is centrifuged and placed in the spectrophotometer where the optical density is measured at ten μ intervals between 350 and 700. The results are then plotted on semi-logarithmic graph paper.

SUMMARY

While the mortality rate of babies born alive with erythroblastosis has remarkably declined with modern treatment, there has been relatively little decrease in the number of stillbirths. It is shown that this is primarily due to the inherent inadequacies of the indirect serological tests presently used to predict the presence of the disease prior to birth. The advantages of a more direct test—the spectral analysis of amniotic fluid—are discussed, and recent series of patients managed by the use of this test are reviewed. It is suggested that amniocentesis may become important in the management of the pregnancy complicated by Rh-isoimmunization.

The use of spectrophotometric analyses of amniotic fluid is presently being investigated at the University Hospitals. The laboratory facilities are available to any physician in the state who desires the use of them. □

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800 N.E. 13th, Oklahoma City, Oklahoma

Atypical Sporotrichosis*

MARK ALLEN EVERETT, M.D.

The course of clinically atypical sporotrichosis is reviewed and the conditions mimicked by this disease are discussed. An analysis of cases reported in the U.S.A. are summarized.

THE CLINICAL PICTURE of *Sporotrichium schenckii* infection is familiar to nearly all physicians. It is characterized by an inoculation site which is a relatively painless, ulcerated, chancre-like lesion, associated with cordlike thickening and nodulation of the subcutaneous lymphatics draining the area. Usually an extremity or, less commonly, the face is involved. The process may progress to ulceration of the subcutaneous nodules but regional lymphadenopathy seldom is encountered. The primary lesion and nodules are quite characteristic and the clinical impression is readily confirmed by culture of the organism on Sabouraud's agar.

However, there are forms of *Sporotrichium* infection which do not present this typical picture and are less readily recognized. The classification of these rarer types by Mikkelsen, Brandt and Harrell¹ is reproduced in slightly altered form in table 1.

*Department of Dermatology, University of Oklahoma School of Medicine, Oklahoma City, Oklahoma.

COURSE AND INCIDENCE OF ATYPICAL SPOROTRICHOSIS

The frequency with which atypical clinical patterns occur is variable but on the North American continent, where localized forms predominate, the incidence in over 100 cases was as seen in table 2. In general, a higher incidence of systemic sporotrichosis has been reported in France, but in any large series systematized forms are exceedingly rare. Of 36 reported cases of atypical disease occurring in North America the distribution was as in table 3.

Cases of atypical *primary inoculation* sporotrichosis are often called "fixed" cutaneous inasmuch as the telltale cordlike lym-

Table 1
Clinical Types of Sporotrichosis

- A. Primary
 - I. Subcutaneous (Localized lymphangitic) (Common)
 - a. Skin
 - b. Mucous membrane
 - II. Cutaneous (Fixed) (Rare)
 - a. Papulo-pustular
 - b. Verrucous
 - c. Nodular
 - III. Pulmonary (Rare)
- B. Secondary (Rare)
 - I. Haematogenous cutaneous
 - II. Systemic (Extension [90 per cent] or Haematogenous)
 - a. Pulmonary
 - b. Bone
 - c. Viscera
 - d. Other
- C. Ids: *Sporotrichids* (Extremely rare)
- D. Carrier States (Incidence unknown)

SPOROTRICHOSIS / *Everett*

Table 2

Frequency of Types of Sporotrichosis	
Localized Lymphangitic	80%
Cutaneous (Fixed)	10%
Haematogenous	05%
Systemic	05%
(117 Cases)	

phatic involvement is not present and the infection remains localized at the site of inoculation. Lesions may simulate carcinoma, acne or a number of granulomatous processes including actinomycosis and blastomycosis. Other cases resemble eczematous or pyogenic infections (figure 1) while some are quite verrucous (figure 2). Ulcerative granulomas and chancreform primary lesions may simulate syphilis or other granulomatous diseases (figure 3). Occasionally, typical localized lymphangitic sporotrichosis will in later stages ulcerate and present with an ulcerative gummatous pattern (figure 4). Less than two per cent of all reported cases of sporotrichosis disseminate haematogenously, and rare cases are about evenly divided between cutaneous, bone and joint and visceral forms. In one case observed by us cutaneous lesions which did not contain organisms appeared. These probably reflected hypersensitivity to the organism. Because of their peculiar appearance, coincidence with systemic disease and the inability to culture *Sporotrichium schenckii* from them, these lesions were named sporotrichids.

DIAGNOSIS OF ATYPICAL SPOROTRICHOSIS

If the diagnosis of sporotrichosis is considered, confirmation is readily obtained by culture which, as in typical cases, is nearly

Table 3

Distribution of Atypical Sporotrichosis	
Primary Cutaneous	19 Cases
a. Pustular	7 Cases
b. Verrucous	7 Cases
c. Nodular	3 Cases
d. Mucous membrane	2 Cases
Pulmonary	2 Cases
Haematogenous Cutaneous	3 Cases
Haematogenous (Secondary to bone and joint)	2 Cases
Bone and Joint (Primary)	2 Cases
Bone and Joint (Secondary)	2 Cases
Subcutaneous Gummatous	6 Cases
Total	36 Cases

always positive within a few days. According to Moore and Ackerman² it is also probable that occasional radiate bodies resembling those seen in actinomycosis are encountered more frequently in atypical cases on direct microscopic examination than in classical lymphangitic cases.

Although *Sporotrichium schenckii* is a saphrophyte which has been found on various plants, shrubs, flowers, fruits and vegetables as well as isolated from soil, unusual clinical forms of infection are more frequently associated with peculiar or rare vectors such



Figure 1. Pyogenic Sporotrichosis



Figure 2. Verrucous Pattern

Mark Allen Everett, M.D., graduated from the University of Oklahoma School of Medicine, where he is now Associate Professor of Dermatology. He is certified by the American Board of Dermatology.

Doctor Everett is a member of the American Academy of Dermatology, the Society of Investigative Dermatology, the Southern Medical Society and the American Venereal Disease Association.



Figure 3. Chancre-like Lesion

as insects or violin chin rests. This observation is supported by the fact that in 1471 cases acquired by miners from soil and wood not one case with visceral, bone or systemic involvement was observed.³

Serological changes do not differ from those found in typical cases. A recent investigator found a positive precipitin test in 12 of 16 active cases.⁴ PAS stains of biopsy specimens will occasionally reveal organisms in the tissue.

COURSE AND THERAPY

Spontaneous recovery from sporotrichosis is rare and untreated infections frequently persist months or even years. Immunity to

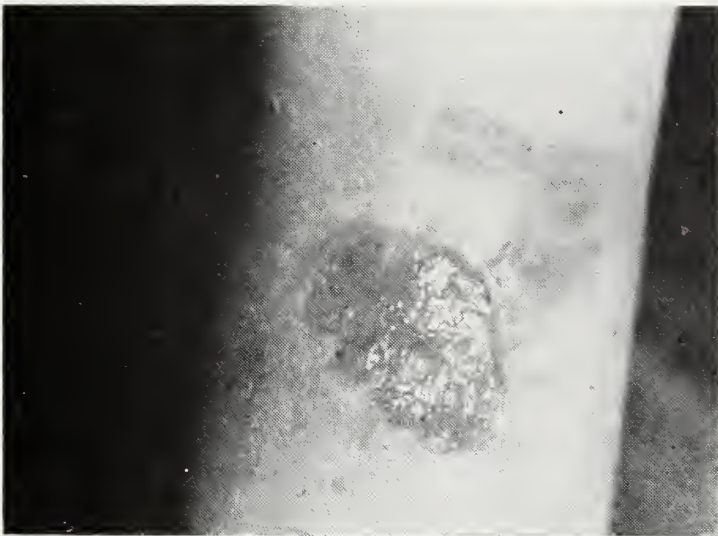


Figure 4. Gummatous Pattern

the disease does not occur and the organism has been successfully inoculated in nearby locations even during active infection.

The therapy of choice continues to be oral potassium iodide. Complete clinical healing accompanied by cultural negativity occurs during the fourth to sixth week of treatment. Despite initial solitary reports of cure with griseofulvin, controlled animal studies as well as recent reports in human disease show that griseofulvin does not predictably affect *Sporotrichium schenckii*. Stilbamidine and amphotercin-B administered intravenously eliminate the disease, but, because of their relative toxicity and difficult administration, they are not considered drugs of choice in treatment of sporotrichosis.

CONCLUSION

Sporotrichosis is a disease which ordinarily presents little difficulty in clinical diagnosis. In five to ten per cent of the cases, however, a non-characteristic clinical picture occurs. Our cognizance of these unusual forms, together with routine utilization of Sabouraud's culture medium, will result in the early detection of even the bizarre case which might otherwise have progressed for weeks or months while being futilely treated by antibiotics and other useless therapy.

Note: We wish to express our thanks to Doctors L. M. Smith, H. D. Garrett, and J. B. Robbins of El Paso, Texas for permission to use several of their photographs. □

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528 N.W. 12th, Oklahoma City, Oklahoma

ABSTRACTS

CARDIAC ARREST

G. Rainey Williams, M.D.

The diagnosis of cardiac arrest is dependent on the absence of pulsation in major arteries. Resuscitation must be carried out at once if the patient is to be salvaged. The approach to actual resuscitative measures should be toward (1) establishing ventilation and (2) establishing circulation. An adequate airway and adequate ventilation of the lungs must be achieved. Initial mouth to mouth ventilation is satisfactory until endotracheal intubation can be accomplished. Circulation is best established by closed chest massage. This consists of firm downward pressure over the lower sternum. The presence of a peripheral pulse indicates adequate circulation. Once adequate ventilation and circulation have been established the underlying cause of the cardiac arrest should be determined and corrected. Then the nature of the arrest—asystole or ventricular fibrillation—can be determined by electrocardiography. Those patients in ventricular fibrillation will usually require external defibrillation. The most effective drugs to use in either asystole or ventricular fibrillation are epinephrine and sodium bicarbonate.

Cardiac Arrest, G. Rainey Williams, M.D., *American Journal of Surgery*, 105: 454-457, April, 1963.

INITIAL EVALUATION AND MANAGEMENT OF THE PATIENT WITH A CHEST INJURY

Warren L. Felton, II, M.D.

The immediate examination of the patient with a chest injury should determine the presence of life threatening situations—primarily airway obstruction and tension pneumothorax. These problems must be treated immediately with endotracheal intubation or tracheostomy and needle aspiration of the thorax. Once these problems have been excluded or dealt with a rapid but thorough examination should be performed. During this time oxygen can be administered and an intravenous infusion should be started with a large bore needle as a blood sample is being typed and cross-matched.

Using only a stethoscope and an aspirating needle one can quickly make a diagnosis of pneumothorax, hemothorax or tension pneumothorax. X-ray examination can be used for confirmation, but the severely injured patient must never be sent to x-ray unattended.

The equipment and technique necessary for performing thoracentesis, pericardiocentesis and intercostal nerve block are described. Similarly indications and technique of closed thoracotomy drainage and tracheostomy are outlined. Once the mechanical derangements of the patient's cardio-respiratory function have been stabilized, he may then be safely transported to a facility for definitive care. The eventual outcome of the patient with a thoracic injury will depend primarily upon his initial evaluation and management rather than on any specialized treatment he may receive at a later date.

Initial Evaluation and Management of the Patient with a Chest Injury, Warren L. Felton, M.D., *American Journal of Surgery*, 105: 445-453, April, 1963.

DISSEMINATION OF CANCER CELLS DURING SURGICAL CURETTAGE*

Three patients with adenocarcinoma of the endometrium were studied by means of an indwelling catheter in the uterine vein, preceding, during and following surgical curettage of the uterus. Blood samples were obtained and examined for the number of circulating cancer cells. An increased number of cells was found during the surgical procedure. Two of the patients had shown no evidence of metastatic disease 19 and 20 months following the procedure. The third patient died of another disease seven months after the procedure and had no evidence of metastatic uterine carcinoma.

The author points out that the significance of cancer cells in the blood has not been established and that the fate of circulating cancer cells in the individual patient cannot be predicted. Patients should not, therefore, be denied clinically proven diagnosis and therapeutic measures. He cautions, however, that every effort should be made to limit repetitious curettage or other intra-uterine manipulations. Differential curettage is advised in taking specimens from the endocervix, lower uterine segment, and corpus, in all cases remotely suspected of having endometrial carcinoma. This procedure would secure a maximum of useful information and avoid unnecessary repetition of uterine manipulation. He advises against endometrial biopsy and simple (non-differential) curettage for both may require differential curettage before therapy can be instituted. The use of hollow cervical dilators (Hanks) to reduce the amount of intra-uterine pressure are also recommended.

*Dissemination of Cancer Cells During Surgical Curettage. James A. Merrill. *The American Surgeon*, Vol 29, 3, 206-211, March, 1963.

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Chlorpromazine in Chronic Schizophrenic Women: Rate of Onset and Rate of Dissipation of Drug Effects, Mervin L. Clark, M.D., Thomas S. Ray, M.D., Robert E. Ragland, M.S., *Psychosomatic Medicine*, Vol. 25, No. 3: 212-217, June, 1963.

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Effect of Circulating Blood Volume on Gastric Secretion, William E. Price, M.D., Merlin DuVal, Jr., M.D., *Archives of Surgery*, 86: 645-648, April, 1963.

Reprints of the above publications are usually available on request from the senior author, c/o Mrs. Joan Campbell, Veterans Administration Hospital, 921 N.E. 13th Street, Oklahoma City, Oklahoma.

The Significance of Right Ventricular Conduction Disturbances

THOMAS N. LYNN, M.D.*

IN THE standard electrocardiogram, right ventricular conduction disturbances are usually characterized by late ventricular depolarization forces oriented to the right and anterior and are graphically represented by an S wave in standard lead I and R' deflection in lead V₁ or V₁ and V₂. Electrocardiograms showing this configuration of the ventricular depolarization potential with a prolongation of the QRS to 0.12 seconds or greater are said to demonstrate "right bundle branch block" (RBBB). Those with a similar configuration, but lasting less than 0.12 seconds are said to demonstrate an "incomplete right bundle branch block." The latter term, although in popular usage, is in most cases a misnomer since the disturbance in conduction appears to be in the subendocardial conducting network rather than in the right bundle branch itself. Therefore, when the QRS is prolonged to less than 0.12 seconds but has the configuration typical of RBBB, the more general term "right ventricular conduction delay" (RVCD) would be more accurate.

RVCD may appear as a result of either acute or chronic pulmonary artery hypertension, and in the acute form, as exemplified by pulmonary embolism, disappear as the pulmonary hypertension subsides. Several forms of congenital heart disease may be responsible for this electrocardiographic finding. It is estimated that up to 95 per cent of people with atrial septal defect have right ventricular disturbances of either the RVCD or RBBB type. Interestingly, these usually decrease following surgical correction of the lesion. The same is true for patients with

partial anomalous pulmonary venous drainage into the right atrium. About 50 per cent of patients with hemodynamically significant pulmonary valvular stenosis have either RVCD or RBBB shown on their electrocardiograms in addition to the more usual right ventricular hypertrophy. Corrective surgery frequently causes these to diminish, though in some cases, especially in which ventriculotomy is done, RBBB may appear.

RBBB may become apparent with myocardial infarction and there is some evidence to suggest that when this occurs, the prognosis is poorer than in myocardial infarction without RBBB. Coronary artery disease producing scattered myocardial fibrosis rather than discrete infarction may also result in RBBB. Similarly, any disease process involving right ventricular muscle or septum which is infiltrative, metabolic or inflammatory is capable of producing conduction abnormalities.

On the other side of the coin are reports indicating that although RBBB occurs in less than one per cent of normal, apparently healthy people, RVCD may be present in up to 20 per cent.

As with most other laboratory tests in medicine, the electrocardiogram must be interpreted in light of the clinical situation to be most meaningful. This is particularly true when RBBB or RVCD is recorded. Either of these may be an interesting but insignificant variant from normal or a reflection of a morbid process at work in the heart. □

The American Heart Association has issued a catalog describing its scientific publications. It lists and briefly describes the books and journals published by the association. Copies of this catalog are obtainable without charge from the Oklahoma State Heart Association, 825 N.E. 13th Street, Oklahoma City, Oklahoma.

*Assistant Professor, Department of Preventive Medicine and Public Health and Department of Medicine, University of Oklahoma Medical Center, 800 N.E. 13th Street, Oklahoma City, Oklahoma.

Dean's Message

On Tuesday, December 3, the people of our state will go to the polls again. Among the questions to be voted upon is one which should be of particular concern to all Oklahoma physicians, and citizens will be interested in knowing what their doctors think about this issue. The proposition is State Question No. 411, the Medical Center bond issue, which is reproduced here for your convenience:

BALLOT TITLE

Shall a Constitutional Amendment amending Article X, Oklahoma Constitution by adding a new section thereto, to be denominated as Section 35 of said Article X, authorizing the Legislature to enact a law whereby the State may become indebted not to exceed seven million dollars (\$7,000,000) for the purpose of constructing new buildings and other capital improvements and for equipping, remodeling, modernizing and repairing any and all existing buildings and capital improvements at the University of Oklahoma Medical Center; authorizing the Legislature to provide for the payment and discharge of principal and interest on said debt from sources of state income be approved by the people?

The result of the vote on this question will have a great and lasting impact on medical education in this state. Since you as physicians will be asked your opinion on this question, we hope you will avail yourself of all the facts from reliable sources. I would like to review developments leading to the calling of a bond election.

The original Medical Center facilities were planned to accomodate a maximum medical

school class of 64 students. By 1949, normal population growth required this number to be increased to 80, and in 1951, to 100. In 1963, 105 students were admitted and now the needs of the state population suggest that we plan ahead for a class of 125.

During this period of growth, programs in nursing, medical technology and related health fields, as well as in postgraduate training, were begun or expanded and the addition of services to the people of the state continued. The hospital indigent case load increased steadily at an average of five percent per year. In 1962, there were over 125,000 patient visits.

Such growth was not limited to the Medical Center. All of Oklahoma's institutions of higher learning were experiencing growth problems. Recognizing this, the Alumni Council representing all state colleges surveyed the campuses in 1958 to assess the capital construction that would have to be planned for the subsequent decade. It was at this point, in 1958, that the Medical School first publicly stated its building needs, including a new University Hospital. The findings of the survey were forwarded by the Oklahoma Alumni Council to the State Regents for Higher Education, who, in turn, recommended to the 27th Legislature that a bond issue be submitted to a vote of the people. This issue was approved at the polls in July, 1960.

A new University Hospital was not included in that bond issue; we presume that there was doubt whether a single item as expensive as a hospital might not make the issue — which already totaled \$35,500,000 — top heavy.

The Regents of the University of Oklahoma remained aware of the growing requirements of the Medical Center, and the President of

the University in December, 1958, appointed a Master Plan Committee of civic leaders and faculty members to survey and recommend steps necessary to keep the physical plant consistent with the educational and service requirements of modern medicine.

After one year of exhaustive study, the Ten Year Program for Medical Center Development emerged. The plan was endorsed by the President and the Regents of the University of Oklahoma in October, 1960. It was then presented to the Alumni Association of the School of Medicine which endorsed the plan at its semi-centennial meeting the same month. In March, 1961, a brochure outlining the Ten Year Program was mailed by the Alumni Association to all doctors in the state. The plan called for expansion of the Medical Center and considerable new construction, including a new University Hospital, to be accomplished in two-year steps. Appropriate legislation was introduced in the 28th Legislature and passed both houses without difficulty. A shortage of general revenue, however, required the bills to go unfunded, but through persistent and loyal legislative support, \$200,000 was made available to the Medical Center to begin the necessary purchase of land and to serve as an expression of intent.

Later in the year the University Regents appointed an architect to prepare preliminary plans for new hospital facilities to replace those in existence at University and Children's Memorial.

The Legislature's Interim Committee on Appropriations and Budget inspected the

Medical Center plant in March, 1962. As a result of the visit, the committee added its endorsement of the needs and recommended to the 29th Legislature that a considerable sum would be saved if it implemented the Ten Year Plan in a single step rather than in stages, and further recommended that this be accomplished by a bond issue. Both nominees for the office of governor visited the Medical Center in October, 1962, as guests of the Alumni Association, heard details of the program and agreed that there was a real need for improving the physical facilities and that a bond issue route seemed to be the best method.

The response of the 29th Legislature was House Joint Resolution 535 (which will appear on the December 3 ballot as State Question No. 411). This resolution predicates that uncommitted revenue produced by the existing cigarette tax will be available for retiring the bonds.

This, then, is the background of State Question No. 411. As you can see, it is the result of more than five years of official, thought, planning and action. Our accrediting agency of the American Medical Association and the Association of American Medical Colleges recommended last year that immediate support should be given to permit realization of the Ten Year Development Program of the Medical Center. The continued success of the Medical Center is irrevocably tied to both its faculty and its physical plant. If either is denied the opportunity to stay even with the growing requirements of our state, decline is inevitable.

Mark R. Everett

THE PUSH ON MENTAL HEALTH

Federal Bills, State Survey and Oklahoma Legislature Revive A Sleeping Giant

While medical association efforts were trained on social security legislation for eldercare, the Kennedy administration has fired a broadside of federal legislation in the area of mental health.

In the 87th Congress, \$4.2 million was appropriated to be doled out to states for comprehensive studies of mental health services and needs. Then, before many states could get such programs underway, broad legislation was introduced in the 88th Congress to provide nearly \$900 million in federal funds to bolster mental health activities in such areas as mental retardation, and the construction and staffing of research and treatment centers.

As paradoxical as it may seem, the federally-sponsored mental health programs now pending legislative action will predictably be approved before the states have had time to complete the surveys of their needs.

Oklahoma Survey

Here in Oklahoma, the statewide survey was officially begun with a September 25th meeting of the Oklahoma Mental Health Planning Committee, held at the Oklahoma Center for Continuing Education on the campus of the University of Oklahoma.

In all, over 200 Oklahomans—physicians, politicians, attorneys, educators, and representatives of lay organizations—were on hand to hear Governor Henry Bellmon explain the importance and role of the committee.

Joe L. Duer, M.D., OSMA President, presided over the general session and introduced Governor Bellmon.

The purpose of the meeting was to acquaint the Mental Health Planning

Committee members with the goals of the project as well as to assign them to one of 13 subcommittees.

Upon receiving subcommittee assignments, workshop or forum sessions were held where each subcommittee learned its responsibility to the overall project. During the sessions, each subcommittee established its own guidelines to be followed throughout the course of the study.

Purpose and Organization

The general purpose of the planning study is to conduct a comprehensive mental health survey of Oklahoma in an effort to identify needs for new and expanded mental health programs. Particular emphasis will be placed on the strengthening of community-based mental health services.

The project is being financed by

a \$50,000 per year federal grant, administered through the State Department of Health.

While the total committee manpower is fixed at approximately 190, physicians account for 65 of the total. The 190 members will function under the auspices of the 13 subcommittees and nine of the subcommittees are under the direction of medical doctors.

The *Subcommittee on Planning* is chaired by Kirk T. Mosley, M.D., Commissioner of the State Department of Health. This subcommittee is responsible to guide the complete mental health study as well as to serve as liaison between the staff personnel and the Governor. Moreover, this body makes policy decisions and serves, for the most part, as an executive or steering committee for the entire Oklahoma Mental Health Planning Committee. Doctor Duer is a member of the Subcommittee on Planning.

The full time staff is composed of John D. Griffith, M.D., Director of Planning, who is the new Mental Health Director of the State Health Department, and Mr. Jack Boyd, project co-ordinator. The staff functions under the direction of Doctor Mosley.

The remaining 12 subcommittees



Emphasis on mental health will produce more diagnostic screening procedures, such as this test to distinguish brain damage from emotional disturbance (University of Oklahoma Medical Center).

and their chairmen are as follows: *Aging*—John W. DeVore, M.D., Oklahoma City; *Alcoholism*—William T. Holland, M.D., Tulsa; *Adult Mentally Ill*—Edwin Fair, M.D., Ponca City; *Emotionally Disturbed Children*—James T. Proctor, M.D., Tulsa; *Delinquency*—Ted Baumberger, Ph.D., Oklahoma City; *Financing*—Eugene L. Swearingen, Ph.D., Stillwater; *Legal Aspects*—Daniel G. Gibbens, College of Law, University of Oklahoma, Norman; *Manpower*—James Mathis, M.D., Oklahoma City; *Mental Retardation*—Sylvia Richardson, M.D., Oklahoma City; *Professional Standards*—George H. Guthrey, M.D., Oklahoma City; *Regional Task Forces*—Joe E. Timken, Ph.D., Norman; and *Research*—Jay T. Shurley, M.D., Oklahoma City.

The Subcommittee on Regional Task Forces is charged with one of the most important functions. For, it is through this group that the actual survey will be conducted on a regional as well as a community level. There will be ten geographical regions in Oklahoma, and the committees will consist of 20 to 50 professional and lay leaders having an interest in mental health. It is from these regional findings that recommendations will be forthcoming.

To further illustrate, the survey findings which the regional task forces uncover will be channeled to respective topical subcommittees such as *Alcoholism*, *Emotionally Disturbed Children*, etc.

The subcommittees will study the data, outline alternatives for improvement and make recommendations which must be approved by the committee as a whole—the Oklahoma Mental Health Planning Committee.

It is from the approved subcommittee recommendations that the Oklahoma Mental Health Planning Committee report will be written.

Legislative Council Studies

Not to be outdone, the 29th Oklahoma Legislature, through its Legislative Council, will take a look at the state's mental health program during the off season. Through passage of Senate Concurrent Resolution #47, the Legislative Council is spe-

cifically directed to study rehabilitative facilities in Oklahoma, evaluate services being rendered to the emotionally disturbed and mentally retarded, and to make recommendations which may be used in drafting future legislation.

While in session, several abortive attempts were made to place the Department of Mental Health under a business administrator or place a layman on an equal par with the medical director. In the resultant furor, the medical director left his post and has since been replaced by psychiatrist Albert J. Glass, M.D., soon-to-retire army colonel.

Mental Health Conference

Anxious to inject professional leadership into the turbulent mental health scene, the Oklahoma State Medical Association's Committee on Mental Health is planning a statewide Conference on Mental Health for January 26th in Oklahoma City.

Chairman George H. Guthrey, M.D. says the purposes of the meeting will be to focus public attention on the profession's interest in the subject and to generally educate physicians toward workable mental health goals.

"We hope the conference will have a direct bearing upon the outcome of Oklahoma's mental health survey," Doctor Guthrey said, "and we are equally hopeful that physicians all over the state will actively participate in the statewide study. If we default in this responsibility, we may have to live with study recommendations drafted primarily by laymen." □

Medical Malpractice Conference Set

Officers of county medical societies and chairmen of county insurance committees will be invited to a "command performance" on November 24th when the OSMA Council on Insurance conducts a special program on professional liability insurance. The event will be held at the Skirvin Hotel, Oklahoma City, from 3:00 p.m. to 5:30 p.m., followed by a social hour and dinner.

The malpractice claims picture in Oklahoma and across the nation indicates the need for improved physician education on the subject, according to Council Chairman Dave B. Lhevine, M.D., and Mr. John C. Parish, Secretary of the St. Paul Fire and Marine Insurance Company.

St. Paul, which protects 94.8 per cent of the OSMA membership, will finance the statewide meeting of county society leaders, as part of its accelerated claims prevention program. Although it is estimated that state physicians have saved \$545,657 in premiums since the arrangement was made with St. Paul in 1952, recent rate increases point up the need for educational programs designed to reverse an unfavorable trend.

Insurance rates in Oklahoma are still below those recommended by the National Bureau of Casualty Underwriters, a statistics gathering unit established by casualty insurance companies.

The Program

The statewide meeting of county representatives is the beginning of an integrated plan for improved physician education.

Mr. Parish will provide conferees with background and experience information on the OSMA-St. Paul program since 1952. He will make observations and recommendations on current and future problems associated with the plan, and will discuss the new classification procedure used in determining a physician's insurance premium.

A St. Paul training film, "Careful, Doctor," will be demonstrated to the audience as an educational tool for physicians' groups.

Claim handling procedure, out-of-court settlements vs. legal defense, and the climate for malpractice claims in Oklahoma will next be presented by three local experts in the St. Paul operation. Gordon Estes, Claims Manager of St. Paul's Oklahoma City office, Lee Grigg, L.L.B., and James B. Folliart, L.L.B., will participate on the panel.

Concluding remarks from OSMA President Joe L. Duer, M.D., will be

(Continued on next page)

followed by a half-hour audience participation free-for-all.

The social hour and dinner will be held in the Skirvin from 5:30 p.m. to 7:30 p.m.

Follow-up

Many county presidents will be asked to arrange special meetings in their home societies for follow-up programs on the subject of claims prevention. Attorneys and claims men will be responsible for presenting the informative programs.

"The kickoff meeting in Oklahoma City and the subsequent meetings at the county level can significantly influence our future claim rate in Oklahoma," Doctor Lhevine said, "and I hope we can count on county officers as well as the general membership in helping us effectively meet and defeat the growing threat of medical malpractice."

Within a few weeks, key persons from all county medical societies will be contacted by mail regarding the November 24th meeting in Oklahoma City. Every effort will be made to obtain 100 per cent representation. □

Trustee District Meetings Underway

OSMA President Joe L. Duer, M.D., Woodward, is pushing ahead with his program to visit all fourteen of the association's Trustee Districts before Christmas.

At this writing, successful meetings have been held in Tulsa (District VIII), Blackwell (District II), Shawnee (District VII), Oklahoma City (District VI), Ada (District XII), Lawton (District XIII), Bartlesville (District I), and, at Western Hills Lodge, Wagoner (District IX).

An estimated 750 physicians and wives have attended the meetings to date.

Other meetings are scheduled for McAlester on October 17th (District X), Hugo on October 18th (District XI), Enid on October 23rd (District III), Altus on November 11th (District XIV) and Clinton on November 12th (District V).

In Doctor Duer's home district (District IV), he is meeting with county medical societies, having already appeared before the Northwest Counties Medical Society on October 10th. Another meeting is set for the Alfalfa-Woods society on November 19th, and one is now being planned for the Texas-Cimarron group.

Civic Club Appearances

While making his tour of the state, Doctor Duer is also appearing before civic clubs. He has addressed such groups in Shawnee, Ada and Lawton, and is hopeful that other meetings can be arranged.

In appearances before lay audiences, he is stressing the achievements made by medical science under a free enterprise system. Also, he is calling the audience's attention to the necessity for a united effort against the "power grab" for central control of private initiative, which is taking place on many fronts and is not limited to a profession. □

"High School Debaters Hear Medicine's Viewpoints"

High school debate teams from Oklahoma and Texas assembled at Central State College in Edmond on October 11th and 12th to prepare themselves for the forthcoming debate season. About 500 students registered for the "Oklahoma High School Legislative Assembly," as the conference was termed by its organizer, Mr. John Graham, professor of speech at the state college.

On Friday evening, October 11th, students heard pro and con speeches on the subject of social security medical care from authorities representing divergent viewpoints. Socialized medicine has been selected as the debate topic for the national high-school program this year.

Organized medicine's position was represented by Jack Schreiber, M.D., Canfield, Ohio, a member of the AMA's Speakers Bureau, John P. Hanna, Chicago, general counsel for the Health Insurance Association of America and Doctor William De Mougéot, Denton, Texas, professor of

speech, North Texas State College.

The labor-government viewpoint was expressed by Mrs. Lee Banburger, Washington D.C., Washington Office, AFL-CIO, Mr. J. H. Bond, Dallas, Texas, Regional Director of Social Security and John Paul Duncan, Professor of Political Science, University of Oklahoma.

On the following morning, the students divided into some thirty legislative assemblies and argued the merits of government intervention into the health care field. Members and staff of the OSMA appeared as "lobbyists" during the debates.

The speakers opposing government intervention were obtained by Rex E. Kenyon, M.D., Chairman of the OSMA Council on Public Policy, in cooperation with the Executive Office and the Speakers Bureau of the American Medical Association. At a September 19th meeting of Doctor Kenyon's Council, approval for OSMA participation was granted.

Other Council Activities

At the Council on Public Policy meeting, the following additional actions were taken:

- An expenditure of association funds was authorized to prepare a large quantity of brochures on the subject of the King-Anderson Bill. Local facts and figures are to be used in the folder, which will be distributed throughout the state in January in connection with a major push to get full implementation of the AMA's "Operation Hometown."

- Plans were approved for developing a crash program on King-Anderson legislation through mass communications media, to be launched in cooperation with county medical societies immediately prior to any congressional decision next Spring.

- A 1964 County Officers Conference was set for January 25th.

- A Congressional Contact Tour was approved for 1964, similar to the trip to Washington, D.C., which was conducted last Summer. Physicians and wives from each congressional district will call personally on their Representatives and Senators in connection with the King-Anderson Bill and other pertinent legislation. Medics will pay their own travel expenses

(a charter plane is being considered) and the OSMA will pay costs of food and entertainment associated with congressional liaison.

- A proposal to study the possibility of a mandatory indoctrination course for all new OSMA members was passed with one dissenting vote.

- It was decided to create a single Interprofessional Relations Committee to provide liaison with all medical and paramedical organizations.

- Miscellaneous proposals were also considered, including the continuation of the OSMA's health column for weekly newspapers, now appearing in sixty papers a week. □

Panel To Evaluate Adolescent Patients' Problems At AMA Clinical Meeting

Practical approaches to everyday problems in adolescent patients will be the feature of a symposium on the program of the 17th Clinical Meeting of the American Medical Association December 1-4 at Portland, Oregon.

Evaluation of the adolescent patient will be discussed by Doctor Frank H. Douglass of Seattle. Other subjects and the speakers include: dermatology, Doctor J. L. Fromer, Boston; nutrition, Doctor Felix P. Heald, Washington, D.C.; growth, Doctor Solomon Kaplan, Los Angeles; gynecologic disorders, Doctor Janet McArthur, Boston; social habits and delinquency, Doctor Adolph Christ, Seattle; and the adolescent athlete, Doctor Donald B. Sloxum, Eugene, Oregon.

Other scientific subjects to be covered by speakers during the four-day meeting include:

Heart and blood vessel surgery; peptic ulcer; the practical clinical approach to anticoagulants, metabolic obesity, anemia, edema and undiagnosed fever; urology; obstetrics and gynecology; trauma as it relates to everyday noises; smoking in relation to mortality and morbidity; and causes of death in automobile accidents.

Professor C. H. Stuart-Harris, director of the Department of Medicine of the University of Sheffield, Sheffield,

England, will appear as a guest lecturer on the scientific program Wednesday morning. He will deliver an hour-long paper on "Shortness of Breath."

Professor Stuart-Harris, who has written numerous books and papers on pulmonary disease, is particularly interested in the infectious and viral diseases and chronic and non-specific pulmonary disease.

Doctor Joseph B. Trainer, of the University of Oregon Medical School, working closely with the AMA Committee on Medical Motion Pictures and Television, announced a varied and extensive live, closed circuit television program which will be shown to physicians during the clinical meeting. Thirty physicians, most of them from Portland, will take part in this program which will cover:

Eye examinations; resuscitation techniques and their utilization in surgery, obstetrics, and in coronary disease; psychiatric evaluation of the alcoholic; a tumor clinic session; the crippled child; and the diagnosis and surgical approaches to the relief of deafness.

The tumor clinic program will be handled exclusively by staff members of the University of Oregon Medical School with Doctor William W. Krippaehne serving as chairman.

The television program will be presented in cooperation with Smith, Kline & French Laboratories, Philadelphia. □

11th Annual Cancer Seminar

The Oklahoma Division of the American Cancer Society will conduct its 11th Annual Cancer Seminar on December 7th at Tulsa's Mayo Hotel.

From 9:00 a.m. to 5:00 p.m., the program will feature the most current advances in the diagnosis and therapy of various cancer sites. Well-known physicians who will present this "Colloquy on Cancer" are:

A. J. Ballantine, M.D., M. D. Anderson Hospital and Tumor Institute, Houston, Texas; James P. Cooney, M.D., American Cancer Society, New York City, New York; James T. Grace, Jr., M.D., Roswell Park Me-

morial Institute, Buffalo, New York; Manuel E. Lichtenstein, M.D., Chicago, Illinois; Hamilton Montgomery, M.D., Mayo Clinic, Rochester, Minnesota.

In addition to the Colloquy, a special panel discussion will be held on "What the Cancer Patient Should Be Told About His Diagnosis and Prognosis."

A complete program will be mailed to all state physicians. □

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

(Act of October 23, 1962: Section 4369, Title 39, United States Code)

1. Date of filing, October 1, 1963
2. Title of publication, The Journal of the Oklahoma State Medical Association
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7. Owner, Oklahoma State Medical Association (Non-profit), 601 NW Expressway, Oklahoma City; Joe L. Duer, M.D., President, P. O. Box 131, Woodward, Oklahoma; R. R. Hannas, Jr., M.D., Vice-President, Sentinel, Oklahoma; Mark R. Johnson, M.D., Secretary-Treasurer, 1219 Classen Drive, Oklahoma City, Oklahoma

8. Known Bondholders, Mortgagees, and other Security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities, none

9. Paragraphs 7 and 8 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner. Names and addresses of individuals who are stockholders of a corporation which itself is a stockholder or holder of bonds, mortgages or other securities of the publishing corporation have been included in paragraphs 7 and 8 when the interests of such individuals are equivalent to 1 percent or more of the total amount of the stock or securities of the publishing corporation.

10. This item must be completed for all publications except those which do not carry advertising other than the Publisher's own and which are named in Sections 132.231, 132.232, and 132.233, Postal Manual

A. Total No. copies printed, Average No. copies each issue during preceding 12 months 2225. Single issue nearest to filing date, 2250. B. Paid Circulation—1. To term subscribers by mail, carrier delivery or by other means, Average No. of copies each issue during preceding 12 months 2019. Single issue nearest to filing date 2023. B—2. Sales through agents, news dealers, or otherwise, Average No. copies each issue during preceding 12 months 38. Single issue nearest to filing date 40. C. Free Distribution by mail, carrier delivery, or by other means, Average No. copies each issue during preceding 12 months 143. Single issue nearest to filing date 162. D. Total No. of copies distributed (Sum of lines B1, B2 and C) Average No. of copies each issue during preceding 12 months 2200. Single issue nearest to filing date 2225.

I certify that the statements made by me above are correct and complete.

s/DON BLAIR

Letter to the Editor

In December of 1963 the voters of Oklahoma are being asked to vote seven million dollars in bonds to "earn" 15 million dollars "free" federal money for a 22 million dollar 600 bed hospital to replace the present beds of the University Hospitals. This action is being taken in spite of the fact that as yet there is no enabling federal legislation to "earn" 15 million "free" federal dollars and probably will not be before our Oklahoma bond issue vote. The rivalry for "earning" and matching "free" federal tax funds is so keen between states that it obscures the fact that these funds arise from our own pockets, but lose a 30 per cent brokerage fee in Washington. We are in the same situation as pigs fighting at the trough before the farmer has made a move to come out of the barn.

Old political hands at the state capital have stated that this hospital bond issue has been the most thoroughly prepared, organized, and pressured legislative lobbying in the history of Oklahoma. If our Medical Alumni office and tax supported faculty could use such force on legitimate legislative measures for the support of medical education, both the number and quality of students of medicine and allied professions would rise rapidly.

It was felt necessary to go to the people through the bond issue route to bypass the legally established advisory and legislative introducing mechanisms of the University of Oklahoma, and the Oklahoma Board of Higher Regents and the State Legislature, since none of these three established bodies for legally recommending such funds for the school was neither willing or able to recommend such an expenditure from state resources. These three bodies were well aware of the urgent and long standing necessity for first studying the existing financial structure and needs of the medical school. Such a study project is to be completed by the Board of Higher Regents late in

1963. The Governor has recently appointed his own study committee. Neither of these projects can be adequately completed by December.

No plan has been proposed to finance the operation of such an expanded hospital program, and more important yet, there is no plan to fill the beds. The unfortunate trend during the past decade has been to decentralize federal welfare medical care over the state at the expense of the teaching patient census at University hospitals. The existing hospitals are running at about 70 per cent capacity with double the average hospital stay and cost of many private hospitals.

Even more significant is the lack of provision for financing the education of nearly 25 per cent more students as proposed. Funds for expansion of facilities, raising of salaries and enlargement of faculty for the first two pre-clinical years of medical education are badly needed even with the present pre-clinical medical student body. We must keep in mind that the primary function of the school is to teach students to be good doctors who by example are taught to treat an adequate number of patients with professional and economic excellence.

These are some of the many questions that arose while the bond issue was so briskly whisked through our state legislature and are still unanswered. These are some of the reasons why many physicians of Oklahoma County signed a petition during a 36 hour rush period after the Senate vote to study the bond program. Four copies of the petition were confidentially submitted to key state government leaders, a confidence which was broken, resulting in humiliating press criticism of the petition signers, most of whom had given years of gratuitous service in teaching and building our medical school. We were made to feel as if we were opposing motherhood, yet our objection was to illegitimacy.

Finally, the two Boards of Regents,

the President of the University of Oklahoma, the State Legislature, the Faculty and membership of the Oklahoma Medical Alumni Association have been only vaguely aware of the Five Year plan emanating from the medical center and officers of the Alumni Association. At no time, however, had any of these organizations been presented with the details of this vague plan nor had they officially acted upon the plan, in part or whole. We might also have inquired as to the source of the finances of the Medical School Alumni offices as well as the legality of lobbying by employees of the State of Oklahoma.

The details and the future economic implications of the program should be clarified and given to each member of the Oklahoma State Medical Association in order that they may in the future act decisively on the expansion program.

If this bond issue comes to vote in December, each member of our profession and its many organizations will be called upon to give an opinion. Either we must speak out clearly and logically at every opportunity on this and other problems of medical economics, or we must accept the dictates of those who are willing, anxious and able to decide any and all problems for us.—J. Raymond Stacy, M.D. □

Diabetes Week

November 17-23 has been set for Diabetes Detection and Education Week. This year-round effort to find unknown diabetics and guide them to medical care is sponsored by the American Diabetes Association, an organization founded by and composed of physicians.

Out of every 120 patients that visit a physician's office, *one* may be an unknown diabetic. Detecting diabetes as early as possible is the responsibility of every physician.

The ADA points out that all individuals with true blood sugars between the normal and the diabetic levels should be considered suspect diabetics and should be retested at subsequent intervals and /or by a glucose tolerance test. □

DEATHS

RAY M. BALYEAT, JR., M.D.
1924-1963

Oklahoma City ophthalmologist, Ray M. Balyeat, Jr., M.D., died August 10, 1963.

Following his graduation from the University of Pennsylvania School of Medicine in 1952, Doctor Balyeat took his specialty training at the E.E.N.T. Hospital in New Orleans. After serving as a medical officer with the U.S. Air Force, he established his private practice in Oklahoma City. He was an Instructor in Ophthalmology at the University of Oklahoma School of Medicine.

Doctor Balyeat held memberships in the Pan American Ophthalmological Society, the Association for Research and Ophthalmology and the American Academy for Ophthalmology and Otolaryngology.

RICHARD D. SHELBY, M.D.
1918-1963

Richard D. Shelby, M.D., died August 5, 1963 at his home in Chickasha, Oklahoma.

Born in Duquesne, Pennsylvania in 1918, Doctor Shelby graduated from the University of Pittsburgh School of Medicine in 1942. Following three and one-half years in the Medical Corps during World War II, he took three years of residency training in neuropsychiatry and general surgery at St. Francis Hospital in Pittsburgh. Doctor Shelby established his private practice in Chickasha in 1950.

He was affiliated with the Alpha Omega Alpha and the Phi Beta Kappa.

ROY LEE FISHER, M.D.
1896-1963

A former Frederick surgeon, Roy Lee Fisher, M.D., died while vacationing in Sun Valley, Idaho last month.

Doctor Fisher, who was born in Wauwatosa, Wisconsin in 1896, graduated from Marquette University School of Medicine in 1921. His private practice was established in Frederick in 1922.

While he was serving with the Air Force during World War II, he was named Frederick's Citizen of the Year in appreciation of his service to the community.

He was named Medical Director of the Veteran's Administration Hospital in Seattle, Washington in 1946. Eleven years later he moved to Apache Junction, Arizona where he was living at the time of his death.

Doctor Fisher was a Fellow of the American College of Surgeons.

SAMUEL GOODMAN, M.D.
1889-1963

A Tulsa physician since 1919, Samuel Goodman, M.D., died August 17, 1963 in Tulsa.

Born in Kansas City, Missouri, he received his medical degree from the University of Kansas School of Medicine in 1912. After serving with the Navy in World War I, he established his practice in Tulsa. He was a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians and a member of the Tulsa Internist Society.

In 1962, Doctor Goodman was honored by the Oklahoma State Medical Association when he was presented a Fifty Year Pin in recognition of his services to humanity for a half century.

MILTON K. THOMPSON, M.D.
1871-1963

Milton K. Thompson, M.D., long-time Muskogee physician, died September 25, 1963 in Muskogee.

A native of Pinelog, Georgia, the 92-year-old doctor graduated from Emory University School of Medicine in 1897. He spent several years taking postgraduate education in his specialty, Eye, Ear, Nose and Throat, both in the United States and abroad.

Doctor Thompson established his practice in Muskogee and was acting consultant at the Veterans Administration Hospital in Muskogee for approximately 25 years. In addition, he was oculist to the State School for the Blind for 38 years.

The Oklahoma State Medical As-

sociation honored Doctor Thompson in 1957 with the presentation of a Life Membership in recognition of his devoted service to the medical profession. □

BOOK REVIEWS

HEADACHE AND OTHER HEAD PAIN, by Harold G. Wolff, Second Edition, Oxford University Press, 1963, pp. 773.

Two facts indicate that this book will most certainly gain and maintain a monumental stature as an authoritative source of information in its field. First, it will find immediate acclaim because of its heritage. An examination of the first edition (1948) for thumbled pages, finger prints and library check-out records proclaim its general popularity, wide acceptance and extensive use. Second, medical science is indeed fortunate that the author had finished the manuscript for this second edition a short time before his untimely death on February 21, 1962.

The basic organization of the book has not been altered. The number of pages has been increased by about 20 per cent. While this increase is indicative of the large amount of new material that has been analyzed and evaluated such material is not presented simply as additional information but, rather, has been incorporated and integrated through extensive rewriting.

The section dealing with the Migraine Syndrome has been broadly augmented and revised. The six chapters of 249 pages devoted to this subject make this an outstanding feature of the book.

The introductory chapter warrants careful reading because of its basic nature and content. Although this chapter contains the same number of pages as the first edition it has been completely rewritten incorporating much new material. For example, the recent controversy over the validity of the "doctrine of specific nerve energies" is succinctly reviewed and well chosen pertinent references cited.

The value of the book is greatly enhanced by the extensive and careful citation of references. Most

statements that may appear new or controversial to the reader are carefully documented by reference citations. The total number of references cited is 50 per cent greater than in the first edition. The placing of all references in one list at the end of the book instead of at the end of each chapter facilitates their rapid identification.

The beautiful literary style makes this book very enjoyable and instructive reading.—*Garman H. Daron, Ph.D.* □

SURGICAL ASPECTS OF MEDICINE, Edited by **H. Daintree Johnson**, Butterworth and Company Limited, London, 1959, pp. 382, \$13.00.

This book was written with a rather unique aim, that of supplying information regarding indications for surgery and surgical results to those who ordinarily make the decision to refer patients to a surgeon, that is, general practitioners and internists. Chapters were written by a number of recognized authorities in surgery from many hospitals and schools in England.

For the most part the book is well written, and, like so many books by English authors, it is easy to read. Emphasis is laid upon the indications for operation and on the operative results that can be obtained or expected. The subjects covered range from common anorectal diseases to heart surgery, but subjects have been selected and no attempt has been made to be comprehensive within these limits.

It is difficult from the reviewer's point of view to determine how well the book accomplishes its purpose. The organization is good, and it is possible to rapidly find specific information about the entities covered. The discussions, however, are brief and non-comprehensive which would detract from their value to an interested internist. The surgical advice apparently is very much left to the individual author, and, in many instances, the advised procedure is not what is customarily recommend-

ed by American surgeons. For example, sphincterotomy is recommended in all cases of chronic pancreatitis; certain pigmented skin lesions can be removed by cauterization; and truss is suggested for hernia in infants up to one year of age.

WILL LEASE or sell medical building with full facilities for one or two doctors, next door to hospital. Reason for leaving is that I am dissatisfied with solo practice. Contact Lynn C. Barnes, Jr., M.D., The Medical Building, 301 South Locust Street, Nowata, Oklahoma.

OPENING for general surgeon, internist or general practitioner. Contact James W. Loy, Administrator, The Chickasha Clinic, Chickasha, Oklahoma.

OFFICE SPACE for rent, five-room suite, northwest area, Oklahoma City. Share reception room with established practitioner. Excellent opportunity for general practitioner, or specialist. Contact Elmer Ridgeway, Jr., M.D., 3601 North May. WI 3-3344.

NEW ULTRA-MODERN 19 room clinic with laboratory, physio-therapy and x-ray. Across the street from a three-year-old, 31 bed hospital. Located in a four-county area where there are 11 doctors for 29,000 people. Would prefer to rent space with guaranteed income, but would consider hiring somebody. Contact David Fried, M.D., Hollis, Oklahoma.

G.P. LOOKING for locum tenens opportunity for 30-40 days, prior to May 31, 1964. Contact Key E. The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

ed by American surgeons. For example, sphincterotomy is recommended in all cases of chronic pancreatitis; certain pigmented skin lesions can be removed by cauterization; and truss is suggested for hernia in infants up to one year of age.

In summary, the book may well be of use as a rapid reference for the busy practitioner who has a question of whether or not surgical consultation should be obtained.—*G. Rainey Williams, M.D.* □

FOR SALE: 1 G.E. R-36 combination radiographic and fluoroscopic unit, 220-V. 60-C Y; 1 P.C. 2 cardiatron #7174; 1 W O 8457 Madrid suction pressure unit; and 1 589 Cameron S M B-25 burl walnut cauterodyne serial #420. Contact R. N. Holcombe, M.D., 534 North 13th Street, Muskogee, Oklahoma.

EXCELLENT OPPORTUNITY for general practitioner to fill vacancy in three-man cooperative group. All the advantages and none of the disadvantages of group practice. Phone or write William A. Matthey, M.D., 801 Pershing Drive, Lawton, Oklahoma. Elgin 3-5005.

PHYSICIAN WANTED to work full time in university health work in Oklahoma State University, Stillwater. Excellent working conditions, regular hours and many extra benefits. Contact Donald L. Cooper, M.D., Director, Student Health Service, Oklahoma State University, Stillwater, Oklahoma.

FOR SALE, 1961 red and white, Chevrolet super sports coupe, air conditioned, power steering, power brakes, bucket seats. Also, clinical camera with enlarger. Contact Mrs. Peter E. Russo, VI 3-4953.

WANTED certified or board eligible internist to join four certified internists in well-rounded clinic group. Contact Gelvin-Haughey Clinic, Concordia, Kansas.

G.P. DESIRES an associate by November or December 1963. Salary to begin, opportunity for partnership at later date. Complete new office facilities in town of over 50,000. Contact Key D, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

PEDIATRICIAN, 1958 graduate of the University of Oklahoma School of Medicine, will be available for private practice July, 1964. Interested in either group or solo practice in any Oklahoma town, 25,000 population or more. Contact Robert T. Dooley, M.D., U.S. Naval Hospital, Jacksonville, Florida.

Doctor Mark R. Everett

DOCTOR MARK R. EVERETT plans to retire as dean of the University of Oklahoma School of Medicine in 1964.

He has served the medical school almost forty years beginning as professor of biochemistry and pharmacology. In 1937 he was named chairman of the Department of Biochemistry, a position he still holds. He was appointed dean of the medical school in 1947 and nine years later received the additional title of director of the Medical Center. Among Medical educators Doctor Everett is the dean of deans having served longer in his position than any other presently active head of a medical school in the United States.

When Doctor Everett became dean sixteen years ago the medical school was on a probationary status but under his guidance it was soon granted unqualified Class A accreditation. Annual freshman admissions have risen from 64 to 104 students, the faculty has increased, buildings have mushroomed and services provided by the Medical Center have multiplied many times. The University of Oklahoma Medical Center has become justly famous not only for training new physicians, nurses and medical technicians but also as an important source of post-graduate medical education.

Former students have fond personal memories of Doctor Everett as a dynamic, inspiring teacher whose contagious enthusiasm made biochemistry something more than a dull subject in a dusty classroom. He brought the same magic quality into his leadership of the medical school. This priceless spirit breathes life into an institution. It cannot be seen or measured but men feel its stimulating effect. It makes the wheels turn, encourages men to work together constructively and brings dreams into reality.

For his monumental contribution to medical education in Oklahoma the medical profession wishes to convey its most sincere thanks to Doctor Everett. □

Fact Finding Report

MEDICAL SCHOOL BOND ISSUE STUDY COMMITTEE

ON DECEMBER 3, 1963, Oklahoma voters will be asked to pass judgment on State Question 411, authorizing the Legislature to incur up to \$7 millions in bonded indebtedness to construct a new 600 bed teaching hospital for the University of Oklahoma School of Medicine. The resolution authorizing the statewide ballot, House Joint Resolution No. 535, was approved by the House of Representatives on April 8, 1963, and by the Senate on April 24, 1963.

At the annual meeting of the House of Delegates of the Oklahoma State Medical Association held May 3, 1963, a resolution on the bond issue subject was considered but no action was taken. The resolution called for recommitting H.J.R. 535 to the Senate for further study.

The officers of the association were thereby left uninstructed as to a position on the merits of State Question 411, yet the professional nature of the question indicated the need for a fact finding survey to assist Oklahoma physicians in casting informed votes on December 3rd.

A study committee was appointed on October 9, 1963, by OSMA President Joe L. Duer, M.D., upon the recommendation of the Council on Public Policy and with the sanction of the Executive Committee. The study committee is comprised of: Joe L. Duer, M.D., Chairman, Nolen L. Armstrong, M.D., C. B. Dawson, M.D., Robert C. Lawson, M.D., Joe M. Parker, M.D., Elmer R. Ridgeway, M.D., Bob J. Rutledge, M.D., and Harlan Thomas, M.D.

The following report summarizes the committee's effort to evaluate an extremely complex problem. While much factual information was made available by informed individuals and organizations, and cooperation from all concerned was excellent, certain limitations of time and material required a

degree of subjectiveness not anticipated at the beginning.

Findings of the study committee are not to be considered the official policy of the OSMA. The report is offered solely as information for physicians.

THE PROPOSAL

H.J.R. 535 states that the pursuant law and bonded indebtedness will be for the purpose of "constructing new buildings and other capital improvements and for equipping, remodeling, modernizing and repairing any and all existing buildings and capital improvements at the University of Oklahoma Medical Center."

Despite the broad language of the legislative resolution, now State Question 411, the expressed major intent is to improve teaching hospital facilities by constructing a new 600 bed hospital which will replace 466 existing beds and create 134 new beds. The estimated cost of the new hospital is \$22 millions, and remodeling of existing facilities is estimated at an additional \$1 million. Federal matching funds are anticipated to supplement the proposed \$7 millions bond issue.

H.J.R. 535 is a major effort of the O.U. Medical Alumni Association to implement its "Oklahoma Medical Center Development Program (1960-70)."

THE NEED

In general, *spokesmen for the medical school and its alumni association* have listed the following points to justify the need for a new teaching hospital:

- The University Hospitals' physical plant is antiquated and needs modernization and replacement.
- The production of physicians, nurses, and other paramedical personnel should be increased, but greater enrollment is contingent upon the improvement and expansion of the physical plant with additional hospital beds (an increase of approximately 20 per cent is planned for the medical school's freshman class).
- Accreditation of the school of medicine and its hospitals, among other considerations, depends on the adequacy of the physical plant.

- Retaining the present high-quality teaching staff will be difficult unless improved facilities are available.

Your committee has explored these statements as well as statements from other interested parties, and submits certain observations in this connection:

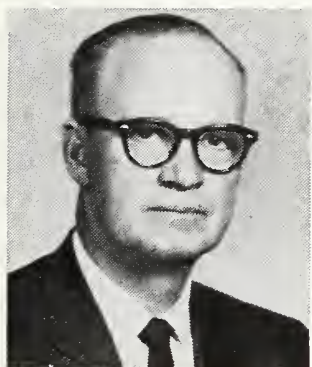
- The separation of Main Hospital from Crippled Children's Hospital requires duplicated space, personnel and equipment in many departments. If these facilities were unified in a single building, greater efficiency should result.
- Most of the Main Hospital and Crippled Children's Hospital, even with remodeling and additions, have become obsolete, making adequate care difficult according to current hospital standards.
- Usable space for an integrated teaching and patient care program is inadequate for present and future demands.
- The need for more medical doctors and paramedical personnel is well recognized. However, a new teaching hospital with increased enrollments would require greater funds for operation. It has been estimated that increased operational funds for the proposed hospital will amount to \$1 million annually. This does not include increased expenses for a larger teaching load.

Despite plans to convert existing University Hospitals to certain educational purposes in the basic sciences, the school building itself will also require enlargement to accommodate the proposed and projected medical student classes.

This study committee cannot fairly evaluate these problems at this time, but they are important considerations in the over-all picture. The school is grossly underfinanced now, and the proposed new hospital and alterations will surely make the financial condition even more critical—a matter for great legislative concern.

- Regarding accreditation as related to physical plant, the 1962 report of the Association of American Medical Colleges said, in part: "It is hoped that current plans for replacing and enlarging, with major new construction, the inadequate and outmoded facilities of the existing (two) hospital plants can soon be implemented."
- The intentions of present faculty mem-

(Continued on Page 539)



No one will deny that the events that transpire at the Medical Center within the next year will have most lasting effects. First, is the bond issue that is to be decided by the voters on December 3rd. Then comes the search for a new dean. The impact of either of these issues should be enough for any one school in any one year!

Another, more subtle issue is being heard from more and more, both within the profession as well as from the taxpayers — that of the proper balance of resulting graduates, between the groups of research men, specialists and generalists. The feeling seems to be that too much emphasis is being placed upon the research and specialists fields, at the expense of the generalist. Is

this true, or not? If so, why? And what can be done about it? All are needed, but in what proportions?

There does exist this paradoxical situation: That in order to maintain the high standards of teaching—and of the school—the school must be staffed with the highest quality faculty possible. The faculty, therefore, comes primarily from the ranks of the specialist and the research men; for who can teach better than he who has made a life's study of the subject? This, then, creates the situation where the student is exposed primarily to the viewpoints of the research man or the specialist. Even though the student may well have been inspired to enter the profession by his old hometown physician, he has lost that contact, and there slowly develops the feeling that the life of the specialist, or the research man, is the only professional life.

The preceptor program was developed with these thoughts in mind to insure that the student was exposed to the life of the generalist. It has been received with enthusiasm and has proven its value. It should be maintained at all costs — and surprisingly enough, it costs the taxpayer nothing!

The school and the profession have a responsibility to make every effort to determine an optimum balance between these groups, and constantly work toward methods of maintaining that balance. We must never let it seem necessary for the taxpayer to feel that he must have a citizen's committee to demand that so many generalists, or specialists, be produced each year.

The profession and the school must maintain the primary interest of quality; the taxpayer wants a doctor when he is sick, and quality at that time is of less importance to him than is the availability of a medical man, of any nature or name. The lack of sufficient numbers and distribution of generalists contributes therefore to an increased usage of less-qualified practitioners and quacks.

The school and the profession must face this problem. It must be kept, and solved, by the school and the profession. It may require considerable revision of thinking, both from the faculty standpoint, as well as from the outside physician's standpoint. We must orient our thinking toward a successful solution. We cannot hide our heads in the sands of time!

Joe L. Rues, M.D.

Salicylate Poisoning in Children*

ALEXANDER W. PIERCE, JR., M.D.
DOMAN K. KEELE, M.D.

*This interesting article concerns
a common and often difficult
to manage problem.*

SALICYLATE INGESTION accounts for 25 per cent of all poisonings in the pediatric age group.¹ Salicylates are the most common fatal agents in accidental poisonings,³ accounting for 13 per cent of fatal accidental poisonings in children one to five years of age.² Therapeutically induced salicylism, either iatrogenic or due to misuse or misunderstanding by parents, constitutes over one-half of all cases of salicylate poisoning.^{4, 5}

METABOLISM

Salicylates are absorbed intact, the rate of absorption being inversely proportional to the length of the side chain. Thus, sodium and methyl salicylate are more rapidly absorbed than acetylsalicylic acid.^{6, 7} In general,

two-thirds of an ingested dose of salicylate is absorbed in one hour⁷, appreciable blood concentrations are achieved in thirty minutes, and peak levels are reached in two hours.⁸ This rapid absorption precludes great efficacy of removing previously ingested salicylates from the stomach.

In the circulation acetylsalicylic acid is rapidly hydrolyzed to the free salicylate ion,⁸ which then becomes bound to the serum proteins, principally albumin. This binding is quantitatively limited and at greater concentrations a smaller percentage of the circulating ion is bound. With a serum level of four mgm. per cent, 90 per cent is bound to the serum protein, whereas with a serum salicylate concentration of 70 mgm. per cent, only 54 per cent of the circulating salicylate is bound. The symptomatology is intensified at higher concentrations because the unbound portion is in equilibrium with that in tissue (liver, kidney, lungs, brain and muscle). It was long held that the serum salicylate level correlated poorly with clinical symptomatology.⁴ Done,¹⁰ in 1960, demonstrated that when both time since ingestion and serum salicylate level are considered, there is good correlation with the severity of clinical symptomatology. Salicylates cross the placenta freely but not quantitatively; and cord blood levels have been found to be two-thirds of those found in the maternal

*From the Department of Pediatrics and the Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

circulation.¹¹ Recently congenital salicylism was reported in the infant of an intoxicated mother.¹²

Four to eight per cent of an ingested dose of salicylate is metabolized by oxidation to gentisic acid in the liver. While trace amounts are excreted in milk, sweat, bile and feces, 75 to 80 per cent of an ingested dose is excreted in the urine.¹³ Salicylate in the urine is found as free salicylate, the glycine conjugate (salicyluric acid) and two glucuronic acid conjugates (monoglucuronate and diglucuronate).^{13, 14} Some investigators believe that small quantities are excreted in a more complex form, uraminosalicylic acid.¹³ Urine excretion varies quite markedly with pH, an alkaline urine containing three to five fold the quantity found in an acid urine.^{8, 9} This increased excretion is in large part due to an increase in free salicylate.¹⁵ Under circumstances of normal urine flow about 50 per cent of an ingested dose is excreted in a 24 hour period.¹³

The formation of a purple color on the addition of ten per cent ferric chloride to an acid urine constitutes a very sensitive test for the excretion of the salicylate radical. The color reaction is due to both free salicylate and salicyluric acid. Slightly different colors with ferric chloride are found in histidinemia, phenylketonuria and following phenothiazine ingestion. While the diacetic acid excreted in ketosis also produces a purple color with ferric chloride, this reaction can be markedly reduced or obliterated by boiling the urine prior to testing.

TOXICOLOGY

Toxic actions of salicylates are at least five-fold: local gastrointestinal irritation,¹⁶ stimulation of the respiratory center,¹⁷ increased metabolic rate,¹⁸ interference with carbohydrate metabolism¹⁹ and interference with normal blood coagulation mechanisms.²⁰ Local gastrointestinal irritation results quite frequently in nausea and vomiting and more rarely in gastrointestinal hemorrhage. The nausea and vomiting may also be related to direct action of salicylates on the central nervous system.⁹

Rapoport and Guest¹⁷ demonstrated that salicylates have a direct action on the respiratory center in the medulla. Principally

they produce hyperpnea, tachypnea and an increased sensitivity of the respiratory center to arterial $p\text{CO}_2$.¹⁸ Increased alveolar ventilation produces respiratory alkalosis.

The increased metabolic rate in salicylism is manifest by increased oxygen consumption, increased carbon dioxide production, and an increased arteriovenous CO_2 difference, resulting in increased cardiac output and heat production.¹⁸ The latter significantly contributes to hyperpyrexia, particularly when the heat losing mechanisms are compromised by dehydration or diminished peripheral circulation.

The action of salicylates on carbohydrate metabolism is poorly understood. Uncoupling of oxidative phosphorylation and inhibition of tricarboxylic acid cycle enzymes has been demonstrated;¹⁹ lactate and pyruvate accumulation reflect diminished aerobic glycolysis. Increased glycogenolysis and diminished glycogenesis produce hepatic glycogen depletion, and there is increased catabolism of fat and protein with inhibition of aerobic glycolysis. Hyperglycemia is not infrequent, although the mechanism for its production is unknown. This finding may produce diagnostic difficulties because hyperglycemia, hyperpnea, polyuria and urinary reducing substances and ketones simulate diabetic acidosis.²¹ In salicylism, however, it is unusual for the blood sugar to exceed 200 mgm. per cent,²² and serum salicylate levels are elevated.

Abnormal blood coagulation is due to diminished levels of circulating prothrombin.

A graduate of Vanderbilt University School of Medicine, Alexander W. Pierce, Jr., M.D., is now an Instructor in Pediatrics at the University of Oklahoma School of Medicine. He is a member of the American Academy of Pediatrics.

Doman K. Keele, M.D., a graduate of the University of Texas Southwestern Medical School, is certified by the American Board of Pediatrics. He is presently at the Denton State School in Denton, Texas.

His professional affiliations include the Endocrine Society, the American Diabetes Association and the Southern Society for Pediatric Research.

The increased prothrombin time is probably due to competitive antagonism with vitamin K. This diminution in the circulating clotting factors may result in gastrointestinal hemorrhage, epistaxis or intracranial hemorrhage.

ACID-BASE BALANCE

The metabolic derangements in salicylism produce a series of changes in acid-base balance. The initial disturbance is a respiratory alkalosis with reduced alveolar CO_2 and reduced serum carbonic acid concentrations. Compensatory renal mechanisms minimize serum pH deviations by increasing bicarbonate excretion. The increased urinary bicarbonate requires increased excretion of sodium, potassium and water. The additional loss of potassium through vomiting may produce hypokalemia and potassium deficiency. When this occurs, hydrogen ion replaces the potassium excreted with bicarbonate and a paradoxical aciduria may be found accompanying alkalosis. Although the total body sodium is generally reduced, 20 per cent of the cases have hypernatremia because of disproportionate water loss.

Alkalosis frequently persists throughout the course of salicylate intoxication in adults but it is usually superseded by a metabolic acidosis in children. This may occur rapidly and make the alkalotic phase clinically inapparent in children under four.⁵ The child's propensity to develop ketosis probably explains the earlier and more severe metabolic acidosis seen in childhood salicylism.

At least three factors play a role in the development of the metabolic acidosis: 1) dehydration, 2) impaired carbohydrate metabolism and 3) increased fat catabolism. Diminished intake, emesis, polyuria secondary to respiratory alkalosis, increased insensible loss secondary to hyperventilation, and hyperpyrexia result in dehydration, which produces diminished renal excretion of hydrogen ions, and thus acidosis.

Inhibition of aerobic glycolysis leads to lactate and pyruvate accumulation. Similarly, increased fat catabolism leads to the accumulation of acetone, diacetic acid and beta hydroxybutyric acid (ketone bodies).

As these anions accumulate there is increased urinary bicarbonate excretion and consequently diminished serum bicarbonate concentrations. When the bicarbonate deficit exceeds the pre-existing carbonic acid deficit an uncompensated metabolic acidosis exists.

During convalescence, respiratory alkalosis may again be seen. If the acidosis is corrected while sufficient salicylate remains to stimulate the respiratory center, the carbonic acid deficit will persist. Continued increased sensitivity of the respiratory center may accentuate this effect.⁵

CLINICAL MANIFESTATIONS

The child with salicylism may present with severe dehydration manifested by oliguria, thirst, diminished skin turgor and dry mucous membranes. Marked hyperpnea occurs with either metabolic alkalosis or respiratory acidosis. In severe cases there may be convulsions, depression, or coma. The hemogram reflects hemoconcentration and may show a moderate to marked leukocytosis. The urine may be acid or alkaline and does not necessarily reflect the serum pH; and proteinuria and moderate glycosuria are occasionally seen. The serum will show a diminished carbon dioxide content, a normal or elevated chloride, a normal or low potassium and a normal or elevated blood urea nitrogen. As already discussed, hyperglycemia is not an infrequent finding. Hypocalcemia with tetany may be observed during the alkalotic phases. The diminished circulating prothrombin produces a prolonged prothrombin time.

The serum salicylate level is of clinical importance in therapy and prognosis. The nomogram introduced by Done, or the calculation of the salicylate level at theoretical time zero,¹⁰ gives a reasonable estimate of the severity of intoxication and is useful in assessing the need for vigorous efforts to remove salicylates from the body. These data and calculations do not, however, supplant clinical judgement.

MANAGEMENT

With due regard for limitations of efficacy as discussed above, one of the most important principles in the management of salicylism is the prevention of further absorp-

tion of gastric contents. This can be done by lavage or induced emesis. Arnold, *et al*,²³ performed experiments in dogs showing that induced emesis was more effective than lavage when the time since ingestion was greater than thirty minutes. Robertson²⁴ outlined his method for inducing emesis in children; 20 ml. of syrup of ipecac was used. A dose of five to 20 ml. was repeated once if vomiting was delayed. This author emphasized that *syrup of ipecac should be used and not the fluid extract of ipecac*. The fluid extract may be absorbed producing ipecac poisoning. Syrup of ipecac is not without danger, however, in that recently ipecac poisoning *with syrup of ipecac* was reported in a child who received larger doses of syrup of ipecac than those recommended above.²⁵

Following the removal of the stomach contents, the patient should be observed for intoxication by following the clinical picture and the serum salicylate level. Serum salicylate levels should be followed for four hours after ingestion and the patient should be observed for hyperpnea for 12 to 14 hours.

In salicylism there is no specific antidote. The main principle of treatment is the removal of the poison from body fluids; in this way the abnormal metabolic processes are stopped and even reversed. Salicylates can be actively removed from the body by three methods: 1) increasing urinary excretion, 2) artificial dialysis and 3) exchange transfusion.

FLUID THERAPY

One of the most important principles in increasing the urinary excretion of salicylates is the provision of adequate amounts of fluid. For mild cases this can be done with oral fluids; for severe cases and in cases associated with vomiting intravenous fluids are required. Before the kidneys can function, existing shock and hypotension must be corrected. Usually this can be affected by the rapid infusion of Lactated-Ringer's solution, 15 to 20 ml. per kilogram of body weight. In cases of anemia and blood loss whole blood is more effective.

In addition to shock, water and sodium deficits must also be corrected before renal function can be normal. These deficits should

be corrected as soon as possible and in most instances can be given safely in six to eight hours. This will require 50 to 100 ml. per kilogram of body weight; one-half can be given conveniently as an electrolyte solution in five per cent glucose and one-half as five per cent glucose in distilled water. In general, a solution containing 3.75 grams (44.6 meq) of sodium bicarbonate and 5.6 grams (100 meq.) of sodium chloride per liter of five per cent glucose in distilled water can be used as the electrolyte solution. In order to replace potassium deficits and prevent the development of hypokalemia, potassium should be given concomitantly if there is no danger of hyperkalemia. After intact renal function has been demonstrated potassium chloride or potassium phosphate should be given in a concentration of two to four meq. per 100 cc. of fluids administered. Of course, it should be given cautiously in clinical hypokalemia even though renal function is not intact.

In the usual case requiring parenteral fluid therapy, not only deficits must be replaced but normal fluid and electrolyte maintenance must be given. In salicylism, however, in order to provide an adequate diuresis and thereby increase salicylate excretion, it is necessary to provide *more* than normal maintenance amounts of water. One and one-half times the usual amount as five per cent glucose in distilled water is supplied and more if necessary to provide good diuresis. Before this much water is given however, it must be established that urinary function is intact and that cardiorespiratory function is not compromised. Maintenance needs of water are calculated according to one of the currently recommended methods and half as much again is added to produce the diuresis. Several methods are available for calculating maintenance needs which give comparable results.^{26, 27, 28}

ALKALINIZATION

In addition to diuresis, it has been shown that alkalization of the urine increases the urinary excretion of salicylate. One of the chief dangers of this therapy is the development of systemic alkalosis and tetany. Alkalization is effective, however, and can safely be used when serum pH's are carefully

followed. Two methods are recommended in the literature.

Oliver and Dyer²⁹ recommend the administration of 3.5 to 5.0 milliequivalents of sodium bicarbonate per kilogram of body weight intravenously; in their cases this resulted in an alkaline urine in 15 of 18 cases. In these 15 a significantly more rapid drop in serum salicylate occurred than in two control groups receiving fluids alone. High values of serum pH were not obtained and no complications occurred. In three patients in whom the urine did not become alkaline, the fall in salicylate levels paralleled that of controls. They recommend repeating the initial dose at the end of four hours if the urine pH is not above 6.9; and they recommend giving one-half the original dose at the end of eight hours if the salicylate level has not decreased. No more than two doses should be given.

Whitten, Kesaree and Goodwin³⁰ also have recommended the use of alkalinizing fluids. Their technique is as follows: An indwelling catheter is inserted into the bladder for obtaining repeated urine specimens. Twenty to 40 ml. of 0.89 M sodium bicarbonate (18-26 meq.) is infused intravenously over a five minute period and at the end of ten minutes the urine is usually alkaline. If not, an additional 10-20 ml. (13.5-18 meq.) is injected. After the urine becomes alkaline a continuous intravenous infusion is given, consisting of 10 ml. of 0.89 M sodium bicarbonate (9 meq.) added to each 100 ml. of one-half isotonic saline in five per cent glucose. This is administered at a rate of 1.5 to 3.0 ml. per minute and should be subtracted from the amounts calculated for the deficits and maintenance therapy recommended above.

Fuernstein, *et al.*³¹ have used acetazolamide (Diamox) to increase the urinary excretion of salicylate. After diuresis is established acetazolamide, five mg/kg of body weight, is injected intravenously. Two similar doses are given at four hour intervals. There were no complications in their patients. Due to the theoretical metabolic acidosis that may be produced and the increased mortality produced experimentally in rats, these authors recommend caution in

the use of this drug. Schwartz, *et al.*³² also emphasize the hazards in the use of this drug.

DIALYSIS

Artificial dialysis is another efficient means of removing salicylates from the body. Peritoneal dialysis is a safe and simple procedure. Ettledorf, *et al.*³³ have published results using this method in seven cases. There was marked clinical improvement in all cases and no complications. Albumisol (Merck, Sharp & Dohme), a five per cent solution of human albumin in an electrolyte solution, was used as the dialysate, albumin being utilized because of its binding capacity. They recommend 100 cc. per kilogram of body weight for three periods of three hours each. Hemodialysis has also been used effectively,³⁴ but this technique is somewhat more complicated and requires experience in its use.

EXCHANGE

Exchange transfusion is a procedure familiar to many physicians and has been effectively used in the treatment of salicylism.^{35, 36} Leikin and Emmaniolides³⁵ have used this method in seven cases who were comatose on admission or went into coma shortly after admission. They utilized two to four times the patient's blood volume and salicylate levels were reduced by 50 per cent. The state of consciousness and respiratory rate improved during the procedure and the carbon dioxide combining power doubled or tripled.

OTHER THERAPEUTIC PRINCIPLES

There are other important principles which should be observed in the management of salicylism. Vitamin K should be administered parenterally in order to prevent the development of hypoprothrombinemia. External cooling measures such as tepid water sponging and passing of cool air currents over the patient should be used for the control of marked hyperpyrexia. Physiologic doses of the Vitamin B complex and ascorbic acid should be administered. Respiratory depressants are contraindicated because hyperpnea is an important homeostatic mechanism which if disturbed may result in death.

SUMMARY

The clinical importance of salicylate poisoning and the magnitude of the epidemiologic problem are emphasized. The pharmacology, pathophysiology, and therapy of salicylate poisoning in childhood are reviewed. □

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800 N.E. 13th Street, Oklahoma City, Oklahoma

OKLAHOMA POISON INFORMATION CENTER

The Oklahoma Poison Information Center was reactivated at the Oklahoma State Department of Health Laboratories, under the direction of F. R. Hassler, M.D., in February, 1962. The center has a direct telephone line with a separate number.

The total number of poison information cards has been increased until the set now includes more than 32,000 cards. Approximately 12,000 of the most frequently used cards have been copied and sets of these are now located at Hillcrest Hospital in Tulsa, St. Anthony Hospital in Oklahoma City, the Ponca City Hospital and the City-County Health Department in Lawton.

About 115 calls are received each month in the Central Information Center. Of these, approximately 75 per cent are from physicians or hospitals. Approximately 60 per cent of the calls concern children five years of age and under. A chemist is available and chemical examinations are provided for the rapid identification of drugs and other toxic substances.

For information call: Oklahoma City Central Center (including St. Anthony Hospital), GA 7-6232; Hillcrest Hospital, Tulsa, LU 4-1351, Ext. 598; Ponca City, RO 5-3321; or Lawton, EL 3-2735.

The Surgical Management of Stasis Ulcers*

H. LELAND STEFFEN, M.D.

This is a review of the surgical management which is based on dermal obliterative lymphangitis as the etiology of stasis ulcers.

VARICOSE VEINS of the lower extremities have long plagued both the patient and the physician, and the formation of the varicose ulcer probably represents the most distressing complication for all concerned. No outpatient department or dispensary is free from the dismal parade of those unfortunate victims of chronic leg ulcer. These ulcers may become very disabling and the problem rapidly becomes one of progressively increasing edema, eczema and ulceration. Thus, this subject comes to stand foremost among the list of disturbing disease entities, both to the physician and the patient.

Ulcers of the lower extremities can be classified as: (1) Stasis ulcers, (2) Luetic ulcers, (3) Rodent or malignant ulcers, (4)

Specific bacterial or mycotic ulcers, (5) Neuropathic ulcers, (6) Hemic ulcers, principally sicklemic, thrombocytopenic and polycythemic, and (7) Arteriosclerotic ulcers, the latter being characterized by severe pain with no varices. All ulcers should be cultured and any unusual appearing ones biopsied before excisional therapy is undertaken. Other appropriate laboratory tests should be obtained as indicated by clinical findings.

Most available statistical series indicate that at least 80-85 per cent of the lower extremity ulcers are due to stasis secondary to simple hereditary varicose veins, and post-thrombotic varicose veins. This study is restricted to the treatment of these stasis ulcers.

The greater the number of recommended treatments for any disease process, the greater is the likelihood that all lack real merit. This axiom is especially true in the treatment of stasis ulcers of the lower extremities. This treatment has long rested on four major principles: bandage support, surgical removal of varices, local application of various decoctions and chemicals and prolonged covering of the ulcer with various metals and membranes including linen, wool, cotton, rubber, lead, silver, etc. Time has proven these principles, alone or combined, to be grossly inadequate in general and all

* A modification of this paper was presented at the Oklahoma Chapter of the American College of Surgeons meeting at the Oakwood Country Club, Enid, Oklahoma on February 20, 1963.

are now being used with less enthusiasm. Small stasis ulcers can heal in a few instances with only elastic bandages, and a few more will heal sometimes with elastic bandages and surgical excision of varices. However, any permanent successful treatment of the majority of large, long-standing stasis ulcers depends primarily upon radical surgical removal of the varices, proper prolonged bandaging, wide and deep excision of the ulcer and thick split-thickness skin grafting.

Before proceeding with this project it was carefully reviewed with Doctor John Powers Wolff, Chief of Vascular Service, St. Anthony Hospital, Oklahoma City, and the published works of Moyer, Butcher, Myers, Smith, Julian, Dye, Schneewind, Shumacker, Moore, Campbell, Hudack and McMasters on the surgical management of stasis ulcers was thoroughly reviewed. A standard surgical approach was adopted for the care of all clinic patients with stasis ulcers who were admitted to the Vascular Service. Only patients with uncontrollable stasis ulcers were to be accepted during the first year of the study and all of the patients were operated by the resident and intern staff.

SELECTION OF PATIENTS

Only patients with a well documented history of the presence of a stasis ulcer for a minimum of twelve to eighteen months, and adequate conservative medical management were accepted. A detailed explanation of the planned therapy, the possible hazards and the need of prolonged postoperative care were explained to each patient. This program was instituted in January, 1961. Due to strict criteria for acceptance of patients the number of cases has been limited, but because early clinical results have been most acceptable in this stubborn disease, it is believed that the efficacy of this approach is such as to bring about the restitution of function to extremities seemingly beyond salvage. This preliminary report is published in hopes that others will join in further clinical evaluation of this work.

ETIOLOGY OF STASIS ULCERS

The etiology of stasis ulcer, though many theories are advanced and thoroughly inves-

tigated, is still unknown and unproven. Venous reflux and obstruction has long been incriminated as the possible cause. The observations of Shumacker and associates tentatively contradict these theses.¹ Many investigators now accept the theory that the local problem becomes one of obliterative lymphangitis of the dermal lymphatics of the skin. Two questions remain unanswered: (1) the possibility of disease of the deep lymphatics playing a part in the genesis of stasis ulcers, and (2) whether the dermal obliterative lymphangitis produces the necrosis and ulceration or the necrosis and ulceration produces the dermal obliterative lymphangitis. J. B. Kinmonth, M.S., F.R.C.S., has successfully demonstrated efficient deep lymphatics in 85-90 per cent of patients with stasis ulcers by injection of x-ray opaque contrast media into the lymphatics. He feels that the remaining 10-15 per cent represents inadequacy of technique rather than inadequacy of the deep lymphatics.² By a technique that will be described below it is relatively easy to demonstrate varying stages of obliterative lymphangitis in patients with varices and early atrophy, induration and pigmentation of the skin that has not reached the stages of necrosis and ulceration. This technique is used preoperatively for evaluation and may be used postoperatively to demonstrate one's results and to more clearly establish in the operator's mind the rationale



Figure 1. Patient is 51-year-old colored male with post-thrombotic varicose veins for ten to 12 years and stasis ulcer for five to six years. Ulcer had never healed during this time. High ligation and stripping, and then three local debridements and split thickness skin grafts. In each instance graft sloughed within ten to 14 days. Note extensive glistening atrophic skin. Glove over toes to assist in sterile field.

of this approach. It readily can be demonstrated that there is a progressive decrease in the number of superficial dermal lymphatics as one approaches the stasis ulcer. The number of demonstrable lymphatics decreases sharply in some cases and quite gradually in others. It is also of interest to note that six to eight weeks after successful grafting of an ulcer good lymphatic connections between the graft and the skin about it have developed. Also, the lymphatic flow pattern of the skin about the graft shows a definite increase over that demonstrated at the time of surgery six to eight weeks earlier. For these reasons, we subscribe to the theory of dermal obliterative lymphangitis as the etiology of stasis ulcers and upon this base our surgical management.

EVALUATION OF PATIENTS

(1) Establish the fact that the ulcer is a stasis one by ruling out the above listed types of leg ulcers.

(2) Arterial flow deficiency evaluation by gross appearance, palpation of pulses and arteriography if indicated.

The extensiveness of the above evaluation will be modified by one's clinical impressions and experiences.

On the basis of the work to date, it appears that age, sex, state of nutrition, duration and location of ulcer, severity of varices, previous thrombophlebitis, preoperative edema and infection and type of previous treatment have no real relationship to the results obtained.

PREOPERATIVE PREPARATION OF PATIENT

When clinic patients are seen in the outpatient department and hospital admission is decided upon for final evaluation and probable surgical therapy, they are carefully in-

H. Leland Steffen, M.D., Enid physician, graduated from the University of Oklahoma School of Medicine in 1954. His practice is limited to his specialty, general surgery.

Doctor Steffen is a member of the Southwest Surgical Congress and the Oklahoma Thoracic Society.

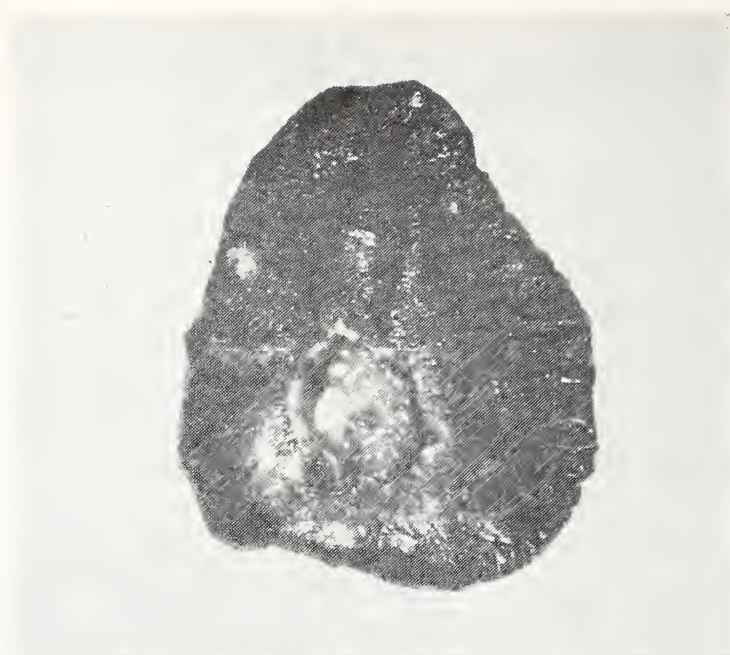


Figure 2. Gross specimen as excised from above leg. Less than two cm. in being completely circumferential. Margins delineated by use of Injection Direct Sky Blue, four per cent.

structed on strict personal hygiene of the lower extremities, the proper use of elastic compression of the involved leg or legs and the importance of increased bed rest and extremity elevation if edema is severe. Due to the financial status of clinic patients, antibiotic therapy is rarely attempted at home. As soon as the patient can be admitted to the hospital, intensive treatment is initiated. The subsidence of all active inflammation and edema before operation is mandatory and it has been necessary to treat most clinic patients in the hospital from seven to ten days prior to surgery. Nearly routinely the patients receive a Tetracycline Hydrochloride and Nystatin preparation, almost complete bed rest, elevation of the extremity and moist saline dressings, which are applied for 45 minutes at least four times daily, are used.

All superficial varicosities and perforators are carefully marked in any acceptable scrub-proof manner and careful preoperative sterile preparation of the skin of the leg is done eight to twelve hours before surgery. The patient is then taken to surgery for the first of his two stages of surgery.

TWO STAGES OF SURGERY

On clinic patients it is more efficacious to perform the surgery in two separate stages. It is safer for the patient, technically more feasible, and the end results are more satisfactory. This also resulted in better psy-



Figure 3. Leg at time of excision of stasis ulcer and adjacent atrophic skin with proven dermal obliterative lymphangitis. Skin above line of excision appears atrophic, but has normal dermal lymphatics.

chological control of the clinic patient. The two stages are: (1) High ligation, stripping and radical excision of the varicosities with extensive resection of the ulcer area, and (2) Thick split-thickness skin grafting to the area of ulcer excision. Each stage will be elaborated upon separately.

FIRST STAGE PROCEDURE

I. The first step of this stage consists of ligation of the greater saphenous vein at the saphenofemoral junction, careful ligation of its multiple tributaries, and then stripping all of the way down to the ankle with an internal stripper. If the lesser saphenous vein is involved, it should be ligated at the saphenopopliteal junction and stripped. Almost all patients with stasis ulcers will have extensive racemose varicosities between the knees and ankles, and these along with the previously marked perforators must be carefully removed. To accomplish complete eradication, it is frequently necessary to make ten to 18 long incisions with extensive undercutting. While this procedure is time consuming and requires longer anesthesia time, it gives far superior end results, and yet carries no greater postoperative morbidity than does high ligation and injection of sclerosing agents. This latter procedure is usually followed by a progression of stasis changes. Myers and Smith reported a series of 1,189 cases of high ligation, stripping and radical excision in which they had four cases of thrombophlebitis (0.3 per cent), and three cases of pulmonary emboli (0.2 per cent).³ There were no fatalities. A review of the

same procedure at St. Anthony Hospital for the past five years reveals that our statistics are practically identical with theirs.

II. The second step of this first stage operation is the far more significant portion and the motivation for this work, and the writing of this paper.

It is believed that a great number of stasis ulcer skin graft failures are due to inadequacy of excision because it is impossible grossly to recognize the extent of dermal obliterative lymphangitis. This can be established only by multiple intradermal injections of Injection Direct Sky Blue, four per cent (a water soluble azo dye) to which has been added hyaluronidase. If this preparation is injected intradermally into normal skin it is promptly taken up in the dermal lymphatics and immediately flares 1.5 to 2.0 cm. from the site of injection. If there is complete dermal obliterative lymphangitis there is a pooling of the dye with no flare and if there is only partial obliterative lymphangitis the flare will be much slower and markedly decreased in area. The injections should be started approximately two cm. from the margins of the ulcer and attempted at 1.0 to 1.5 cm. intervals until normal dermal lymphatics are demonstrated. This is to be carried out at all margins of the ulcer and taken to normal skin. A tuberculin syringe and a 26 to 30 gauge needle is used for these injections.

The injection technique used is that of inserting the needle very superficially into the epidermis at a 45 degree angle with the beveled side down. The needle is then brought nearly parallel to the surface of the skin and



Figure 4. Leg ready for skin graft on 12th day after excision of stasis ulcer. Early granulation tissue islands are to be noted. Only dry gauze debridement prior to placement of graft.



Figure 5. Leg one week after skin graft with complete take and excellent early healing. Note trophic improvement of skin above graft.

inserted a little further. The needle is rotated back and forth two or three times as a minute quantity of dye is injected. Normal dermal lymphatics will immediately take up the colored material. It is not unusual to find nearly complete dermal lymphatic occlusion as far as 12 to 15 cm. from the ulcer margins. This method of demonstrating dermal lymphatics was first described by Hudack and McMasters in 1933,⁴ but not clinically applied until its use in stasis ulcers was reported by Moyer and Butcher in 1955. After the margins of the dermal obliterative lymphangitis are determined carefully and marked, radical excision of the atrophic skin with the base of the ulcer and all of the underlying inelastic and fibrotic subcutaneous tissue and fascia must be carried out. In the majority of advanced cases the depth of excision should include the fascia overlying the muscle, for in the presence of long-standing stasis ulcer the fascial fibrosis and thickening is extensive. This also facilitates ligation of the perforating veins which are almost invariably present beneath this area. The seemingly irreversible character of the tissue changes locally seem to make this radical approach mandatory. It has been a practice never to excise periosteum or peritendinum, and to use #000 chromic catgut suture material for hemostasis in the ulcer bed in order to reduce the formation of micro-abscesses and the subsequent late foreign body ulcerations. In addition, an incision is made three to four inches cephalad from the excised ulcer bed and lateral flaps

are raised in search of perforators. In approximately 75 per cent of the cases this search is rewarding and rarely is there any significant slough of the flaps.

These patients receive early ambulation and routine postoperative care in addition to antibiotics, moist packs, and other measures, as indicated for care for the excised ulcer bed. At the end of five to ten days the patient is returned to surgery for the second stage of his surgical management.

SECOND STAGE PROCEDURE

The entire leg is prepared and a thick (0.015 to 0.018 inches) split-thickness graft is taken from the anterior aspect of the same thigh and placed on the ulcer bed which has been debrided only by abrasion with dry gauze. Numerous 1.0 to 1.5 cm. incisions are made in the graft which greatly facilitates serum drainage and early attachment. These openings have produced no complications, heal early and leave no significant scars. Thorough irrigation beneath the graft with normal saline is carried out before the dressings are applied. A split thickness graft will take readily in these areas, particularly well on the muscle. Significant points to be observed at this time are:

1. Interrupted well placed sutures of #0000 black silk are used to attach the graft.
2. Sterile one-fourth inch foam rubber is cut to conform to the general shape of the graft area and applied directly over a double layer of vaseline gauze.



Figure 6. Leg four to five weeks after skin graft. Note continued healing, no slough, and progressive improvement of skin above grafted area.

3. The dressing must be applied with care to avoid pressure necrosis of the graft over the tibia and malleoli.

4. The leg and foot is immobilized by means of massive pressure dressing and a heavy posterior splint which extends from the upper mid-thigh to the toes.

At the end of seven to ten days the dressing is changed for the first time, part or all of the sutures are removed and the heavy protective dressing and the immobilizing posterior splint are reapplied for an additional four to five days and then the use of the rigid splint is discontinued. It has become a policy to keep the feet and legs on the bed for 12 to 21 days because early dependency and mobilization have in some instances resulted in loss of a significant portion of the graft in cases where previously it had looked perfect.

FOLLOW-UP CARE

After discharge from the hospital close supervision and observation is essential. Elastic supports are to be worn at least one year following surgery, and permanent use should be encouraged. This is not only to help control swelling but to protect the extremity from trauma. The slightest abrasion of a new graft may initiate an ulcer. This purpose can be served by either the thin elastic roll bandage or a fitted elastic stocking. Meticulous follow-up care is an absolute necessity.

RECURRENCE OF ULCERS

The most significant factor in recurrences was failure to control edema in the leg after the surgical treatment is completed and the graft has healed.⁵ If there is to be a recurrence, it should be expected in patients with extremely large ulcers, multiple ulcers, prominent uncontrolled postoperative edema and in those who had poor graft takes and then slow epithelization and healing. This enigma of postoperative edema is probably due to lymphatic vessel disease and to venous insufficiency, either or both factors being present in varying degrees in each individual. The only real solution lies in prevention and this may be done by: (1) Elastic bandaging, (2) Regular morning and afternoon rest periods with elevation of the involved ex-

tremity and (3) Meticulous care to obtain early complete healing of any partial graft loss.

RESULTS

While some of these patients have now gone over one year and others are approaching one year without recurrence, we do not feel that our postoperative follow-up is sufficient to warrant a statistical review but at this stage the results are comparable to those of Butcher in which he reported 59 cases which had been followed for 13 to 52 months and of which 49 (83 per cent) are free of ulcer, six have been reoperated and have now been free of ulcer for over one year. One has been reoperated, but still has an ulcer.⁶

Of this group of patients who have had high ligation with radical stripping and extensive stasis ulcer excision with delayed grafting, whether they were in the approximately 85 per cent which remained well and healed, or the approximately 15 per cent with some degree of recurrence, none have had any significant disability from pain or infection. Of this group, none have had even moderately severe infections, pulmonary emboli or thrombophlebitis. This fairly extensive surgical approach has not placed life, limb, or general health in greater danger than before surgery, and two have remained healed who were already scheduled for amputation when first seen. All are grateful for their treatment and the results obtained.

DISCUSSION

The principles as set down above are the ones which have evolved from study of reported work and experience in handling the complications of these patients. These complications have resulted in minor changes in the surgical management as the study has progressed. A detailed account of these changes would add bulk, but little value to this report. The principles as stated above are those which will be used as this work is continued. Variations would be acceptable in treating private patients whereas more prolonged care and hospitalization is mandatory in the average clinic patient.

SUMMARY

A detailed review of the preoperative evaluation and preparation, the radical sur-

gical management and the postoperative care of the patient with stasis ulcer disease of the lower extremity is given. Special emphasis is placed on the etiology of stasis ulcers and the demonstration of dermal obliterative lymphangitis by intradermal injection of Injection Direct Sky Blue, four per cent with hyaluronidase added. □

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SCHEDULE OF OU MEDICAL CENTER POSTGRADUATE COURSES

November 13
December 11
January 8
February 12
March 11

WEDNESDAY POSTGRADUATE SHORT COURSE SERIES FOR
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* * * * *

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Mushroom Poisoning*

ROBERT A. BEARGIE, M.D.

*Here is another entity to be considered
in the differential diagnosis of acute
gastrointestinal disorders in children.*

FROM EARLY SPRING until late fall physicians engaged in the care of children may be required to treat mushroom poisoning. In order to recognize the clinical manifestations of this disorder and to institute prompt and effective treatment, a general knowledge of the subject is necessary.

Perhaps the earliest record of mushroom poisoning was in the fifth century B. C. Euripedes, the Greek dramatist, reported that his wife and three children died suddenly following the ingestion of field mushrooms. The deaths of such notable individuals as the Emperor Claudius, King Charles VI of France, Pope Clement VII and the widow of Czar Alexis of Russia have also been attributed to eating mushrooms.¹ Mushroom poisoning is not only of historical interest, but continues to be a widespread problem. At the present time, calls regarding mushroom ingestion account for approximately one to two per cent of all cases reported to the National Clearinghouse for Poison Control Centers in Washington, D.C.²

Ford¹ reported 12 deaths due to mushroom poisoning in the United States during 1905

and 15 fatalities in 1906. Buck³ collected reports of 24 deaths due to mushroom poisoning in the United States for the years 1924 to 1960. In England and Wales 38 fatal cases were recorded during a 25 year period (1920 to 1945).⁴ In Central Europe there was a striking increase in mushroom poisoning following World War I. The fields and forests were stripped of fungi by the impoverished, hungry population. This prompted the enactment of laws requiring inspectors to check mushrooms before human consumption.

It is estimated that throughout the world several hundred deaths due to mushroom ingestion occur each year. The overall morbidity is difficult to estimate since many non-fatal cases are either unrecognized or not reported. Morbidity and mortality rates vary with the type of mushroom ingested. Because there are specific geographical distributions of most fungi, morbidity and mortality also vary from one area to another.

Worldwide, the *Amanita phalloides* is the most frequent cause of death from mushroom poisoning and it is estimated that it is responsible for more than 90 per cent of the fatal cases. In the United States *Amanita phalloides* occurs although most fatalities result from poisoning due to *Amanita verna*. Death following ingestion of *Gyromitra esculenta* and *Amanita pantherina* have been reported in this country. Oklahoma is the habitat of at least three poisonous varieties: *Amanita phalloides*, *Amanita muscaria* and *Lepiota morgani*.⁵ Although uncommon, there are other toxic mushrooms in Oklahoma.

*Department of Pediatrics, Children's Memorial Hospital, University of Oklahoma Medical Center.

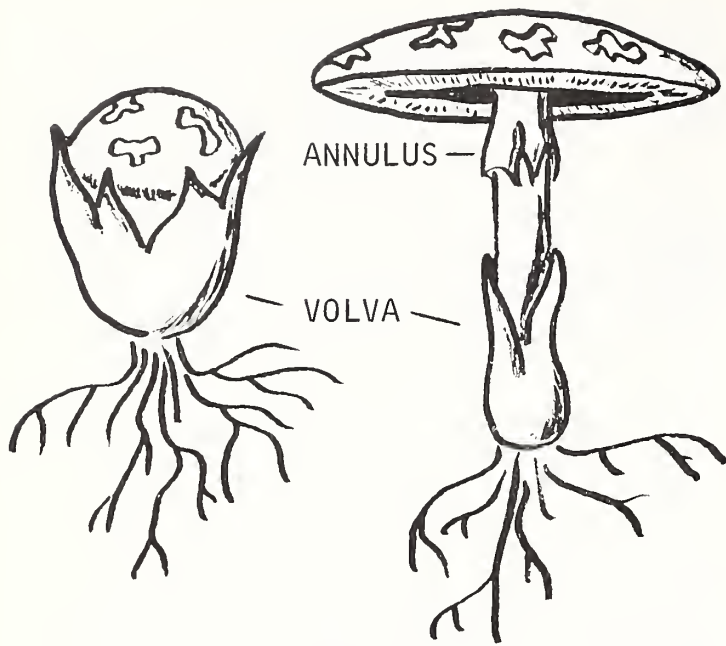


Figure 1.

IDENTIFICATION

The main distinguishing feature of the deadly *Amanita* is the presence of the volva. As illustrated in the diagram, the volva is a membrane that surrounds the immature form and is torn away from the dome as the mushroom grows and the gills form. Its remnant persists at the base of the stalk as a definite swelling. A second membrane, the annulus or veil, stretches from the edge of the gills to the stalk. It, in turn, is torn as the mushroom grows and is left as a collar around the stalk. Each membrane may occur separately in other genera but together they are found only in species of the genus *Amanita*. Unless the entire base of the mushroom is preserved the presence of the volva is difficult to identify.

Although demonstration of the two membranes in a specimen is a reliable method of identifying the *Amanita* species, there are limitations to its application. Other means of identification will be mentioned only to emphasize that they remain in the field of the mycologist. Fragments of the ingested mushroom, obtained by gastric lavage or brought to the physician by the parent, may be the only clue to identification. If these fragments are unsatisfactory for identification other specimens should be obtained from the same geographic area as the mushroom under suspicion. In general, identification by

color is unreliable though helpful in determining some species. The isolated spores of *A. phalloides* have a characteristic microscopic appearance.⁶ A more exacting approach is the isolation and identification of the specific toxins. The toxins of *A. phalloides* may be isolated by paper chromatography.⁷

The ingestion of certain species of mushrooms consistently produces toxic manifestations, but the severity of poisoning may vary considerably from one individual to another. Although the quantity of toxin produced by a given species may vary from year to year and with climate and habitat, a single mushroom may contain enough toxin to kill an adult. In children, symptoms of mushroom poisoning usually appear earlier and are more severe than in the adult. Ford's⁸ classification of toxic manifestations of mycetismus (mushroom poisoning) is based on the predominant body system involved. This classification includes *mycetismus nervosus* (so termed for its muscarinic effect), *mycetismus choleraformis* (delayed, severe gastrointestinal symptoms), *mycetismus gastrointestinalis* (immediate, mild to moderate gastrointestinal symptoms), *mycetismus sanguinarius* (hemolytic anemia) and *mycetismus cereбрalis* (symptoms ranging from a sense of well being to hallucinations).

Mycetismus nervosus is caused by fungi that contain the alkaloid muscarine. *A. muscaria* and *A. pantherina* are well known for their muscarinic effect. The onset of symptoms is usually within two to three hours, with abdominal cramping followed by excessive salivation, sweating, miosis, bradycardia, diarrhea, confusion and eventually coma and cardiovascular collapse. The gastrointestinal symptoms may dominate the clinical picture. It is necessary to make careful and frequent checks for muscarinic effect. Pupillary signs are inconsistent and not uncommonly constriction appears late. The very apprehensive patient may have dilated pupils.² Even in severe cases, the prognosis is good if the intoxication is recognized and atropine administered promptly.

Mycetismus choleraformis accounts for most fatalities. Several species of *Amanita*, chiefly *A. phalloides* and *A. verna* cause this type of mushroom poisoning. Symptoms usually occur six to 15 hours following inges-

tion. There are cases reported in which symptoms were delayed as long as 48 hours. Typically there is sudden onset of severe abdominal pain, vomiting and diarrhea. The gastrointestinal features may be so severe that death results within 48 hours. If the initial gastrointestinal phase is overcome, there may be a brief pseudo-remission lasting a day or two. Signs of multiple organ involvement, chiefly the liver, may follow. In those who succumb to this type of poisoning, death occurs within five to eight days following ingestion. Children may have an accelerated progression with death in three to four days.

With *mycetismus gastrointestinalis* symptoms of abdominal pain, vomiting and diarrhea may be present within an hour of ingestion. Abdominal cramping is notable. Vomiting may be very brief in duration. Diarrhea may persist 24 to 48 hours. Symptoms terminate rapidly and spontaneously with infrequent fatalities except in debilitated individuals. *Lepiota morgani* may cause this form of poisoning. The rapid onset of gastrointestinal symptoms following ingestion should distinguish this form of poisoning from *Mycetismus choleriformis*.

Mycetismus sanguinarius is characterized by vague abdominal distress, hemolytic anemia and jaundice. Hemolysis is caused by helvellic acid, found in fungi of the genus *Gyromitra*. Seven recent fatal cases reported in the United States were caused by *Gyromitra esculenta*.³

In *mycetismus cereбрalis* symptoms appear four to five hours following ingestion. The toxin promotes a sense of well-being, inappropriate behavior, visual disturbances and a staggering gait. The symptoms are transient and the patient is well in 24 to 48 hours. Mushrooms of the genus *Panaeolus* produce this type of poisoning.

MANAGEMENT

When the diagnosis of mushroom poisoning is suspected every effort should be made

to recover the fungus, to record the date and place where the mushroom was gathered, to obtain a careful history of other individuals ingesting similar mushrooms and to obtain expert help in identifying the fungus species. Specific treatment includes immediate gastric lavage and/or induced emesis. If diarrhea is not a part of the clinical picture a cathartic and high enema may be added. Since the fungi are absorbed slowly these measures are worthwhile even after the onset of symptoms.

Sweating, miosis, bradycardia and abdominal cramping may be relieved by administration of large doses of atropine. In a toddler the initial dose should not exceed 0.02 mg/kg which may be repeated in 30 to 60 minutes. In older patients doses up to 0.2 to 0.3 mg intramuscularly or intravenously may be necessary if the poisoning is severe. The patient's response to the initial dose will determine the amount and frequency of subsequent administration. Children with muscarinic poisoning tolerate moderately large doses of atropine.⁹

In all types of mushroom poisoning the quantity and type of fluid needed will depend upon the presence and severity of gastroenteritis. In poisoning due to *A. phalloides*, there is an early hyperglycemia, then later a hypoglycemia which may contribute to excitement and convulsions. It seems reasonable, therefore, to provide intravenous glucose until adequate amounts can be ingested orally. Blood transfusion may be necessary in poisoning with a hemolytic component.

Barbiturates and narcotics should be used cautiously but are often required for excitement, confusion, convulsion and severe abdominal pain. At present there is no conclusive evidence for the effectiveness of steroid therapy in the treatment of mushroom poisoning. Hemodialysis, as a lifesaving procedure in the treatment of oliguric renal failure secondary to mushroom poisoning, was reported by Elliott, *et al.*¹⁰ in 1959.

SUMMARY

Mushroom poisoning is not only of historical interest but continues to be a consideration for all physicians engaged in the care of children. A general knowledge of

Robert A. Beargie, M.D., graduated from the Ohio State University School of Medicine in 1957. At the present time, he is Instructor in Pediatrics at the University of Oklahoma Medical Center.

Poisoning / BEARGIE

mushroom poisoning and an awareness of the clinical manifestations will insure prompt treatment and specific measures when indicated.

Worldwide, species of the genus *Amanita* cause the majority of deaths due to mushroom poisoning. Seven of the 24 fatal cases in the United States from 1924 to 1960 were caused by *Gyromitra esculenta*. Toxic mushrooms found in Oklahoma include *Amanita phalloides*, *Amanita muscaria* and *Lepiota morgani*.

Fungi of the genus *Amanita* can be distinguished by the presence of the volva and annulus, two membranes found together only in members of this genus. These membranes may occur separately in other fungi.

There is a great variation among individuals in the severity of clinical manifestations produced by a given toxin, as well as a difference in the amount of toxin contained in the members of a particular species. Ford's classification of mushroom poisoning is based on the body system chiefly involved: *mycetismus nervosus* (muscarinic effect), *mycetismus choleriformis* (delayed, severe gastro-

intestinal symptoms), *mycetismus gastro-intestinalis* (immediate, mild to moderate gastrointestinal symptoms), *mycetismus sanguinarius* (hemolytic anemia) and *mycetismus cereбрalis* (symptoms ranging from a sense of well-being to hallucinations).

In general the symptomatology and clinical findings will dictate the mode of therapy. After immediate measures to empty the stomach, specific treatment is limited to use of atropine, glucose, fluids and electrolytes. Since complete recovery of every affected organ can be expected in those who survive, vigorous treatment is obviously worthwhile. □

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800 N.E. 13th Street, Oklahoma City, Oklahoma

OU MEDICAL CENTER NAMES THREE DEPARTMENT HEADS

Three new department heads, two of them in charge of newly-established departments, have recently assumed duties at the University of Oklahoma Medical Center.

Named were Sidney Philip Traub, M.D., professor and head of the Department of Radiology; Ben I. Heller, M.D., professor and head of a new Department of Clinical Pathology; Kelly M. West, M.D., professor and head of a new Department of Continuing Education.

Doctor Traub came to Oklahoma from Saskatoon, Canada, where he was associate professor of radiology at the University of Saskatchewan College of Medicine.

Doctor Heller was formerly professor of medicine at Marquette University School of Medicine and chief of Medical Service at the Wood VA Center. Before going to Marquette in 1960, he was for five years associate professor and professor of medicine at the University of Arkansas Medical Center.

Doctor West returned to the Oklahoma State Medical Center after a two-year leave from the Department of Medicine during which he was special assistant for scientific affairs with the U.S. Office of International Research, Bethesda, Maryland. □

The Management of Ocular Injuries*

EDWARD A. DUNLAP, M.D.

Conservatism is the keynote in therapy of ocular injuries by the general practitioner. This article suggests both what he should and should not do in the three categories of commonly seen injuries: foreign bodies, burns and blows.

OFTEN THE general practitioner is the first or perhaps the only physician to see a patient with an ocular injury. He is thus in a position to save vision in some instances; and by the same token is in a position to do harm by improper care.

The foundation of all eye injury care by the general practitioner is conservatism, with immediate referral to an ophthalmologist in all but the simplest cases. Most eye care is so highly specialized as to both judgment and surgical techniques when needed that it is beyond the realm of safe management by the general practitioner. While such care is at times impossible in remote outlying areas, improving transportation facilities make referral less of a problem.

Relatively little in the way of drugs and equipment is needed to effect proper examination and therapy. A suggested list is:

EQUIPMENT

1. Good light.
2. Magnification for examination.
3. Suture material, applicators, eye pads, etc.
4. Instruments:
 - Lid retractor
 - Lid speculum
 - Sharp spud
 - Small forceps and scissors

DRUGS

1. Local anesthetics.
2. Fluorescein.
3. Antimicrobial agents.
4. Cycloplegics.
5. Sterile irrigating solution.

The majority of ocular injuries seen by the general practitioner fall into three groups: (1) foreign bodies, (2) burns, and (3) blows. In all three forms, a careful history should be taken in view of subsequent potential legal aspects. Every case should also have some attempt made at recording visual acuity for the same reason.

Taking up Group 1 first, that of foreign bodies, careful examination is imperative since the offender may be minutely small. Examination will often require and be aided by instillation of a local anesthetic as the first step. Careful spreading of the lids is next—rough handling can result in further eye damage if a globe happens to be lacerated and the examiner's thumb is not controlled. Globe inspection follows, using a good light and visual magnification. The

*From the Department of Surgery (Ophthalmology), The New York Hospital—Cornell Medical Center.

foreign body may be visible at once on cornea or conjunctiva. If it is not found, the upper lid should be everted, using an applicator or finger tip. If nothing is seen, a fluorescein strip is applied to the lower lid inner surface. This produces a green stain of any broken epithelial surface, and may lead to discovery of a minute foreign body or the site of a former one. Frequently the foreign body will be gone but the broken surface of its site is still there to stimulate the lid as it moves over the site, giving the impression to the patient of continued foreign body presence. The demonstrable absence of a former foreign body allows reassurance. If a foreign body is present and is *conjunctival*, it is usually easily wiped off. A *corneal* foreign body is another matter. If irrigation fails to dislodge it, one or two passes with a fine moist cotton applicator is in order. If this fails, continued wiping is a mistake as it will only denude more corneal epithelium and force the foreign body in deeper. A spud, or fine-pointed knife, or a hypodermic needle should then be used, putting the point under or beside the foreign body and lifting it out. If it is found to be deeply embedded or resistant to removal, further efforts should be abandoned before the cornea may be perforated, and an ophthalmologist should be utilized at this stage of difficult removal. Iron foreign bodies often produce rust rings that may be difficult or impossible to dislodge with a spud when first seen. They are often more resistant to removal than the foreign body, but removal can be promoted by touching just the ring with a finely pointed toothpick dipped in one-half per cent silver nitrate. This promotes removal of the softened ring the following day. There are now available small battery-operated drills, using a dental burr, for cleaning such areas. These drills are best left in the ophthalmologist's hands.

Following conjunctival foreign body removal, no patch is ordinarily needed, but it is wise to patch every corneal foreign body injury for from four-48 hours. This minimizes development of the nasty complication of corneal ulcer. An antimicrobial should be used as a precaution—preferably neomycin, ten per cent sulfacetamide, or some such

drug. Use of a type of antibiotic allowing easy sensitization or to which a patient may already be sensitive, such as penicillin, is unwise. Steroids are usually not necessary, nor is the routine use of atropine.

Cases of non-metallic, multiple corneal foreign bodies such as dirt or gun powder call for some restraint on the part of the physician in that extensive digging may set up a severe keratitis or result in additional scarring. These cases should be conservatively handled by removal of large particles, allowing most or all of the fine ones to extrude spontaneously—which they usually will do over a period of time. Cases of multiple metallic foreign bodies usually demand removal of all particles.

Penetrating foreign bodies may or may not be easily recognizable. Any penetrating scleral or corneal injury must be considered suspect of harboring a foreign body and x-ray studies should be made. Current compensation boards and malpractice laws may penalize the physician for failure to examine by x-ray for a possible foreign body. The history of a foreign body injury plus the finding of any blood in the anterior chamber, a distorted pupil or torn iris, a hazy lens, a soft eye to finger-tension taking, a loss of red reflex through the pupil on fundus examination, or sign of retinal tear mean serious trouble and an ophthalmologist is needed at once.

In cases of known foreign body penetration, an effort should be made to obtain some of the material with which the patient was working. This may allow testing of magnetic properties, x-rayable status, chemical composition and such factors the knowledge of which promote more definitive care.

An occasional patient may be seen with a partially penetrating foreign body with it still in place. If the external portion of the foreign body is not so large as to prove impractical, it is often wiser to leave it in place until the patient can be seen by an eye man. Injudicious removal of such a foreign body may result in prolapse or escape of, or irreparable damage to globe contents.

Corneal abrasions without foreign body presence are common, and are usually very painful. They are best handled by a local anesthetic as needed for comfort, a local antimicrobial, a tight pressure patch, and an anal-

gesic. Most of these abrasions heal quickly but there is a tendency for some to break down and erosion to occur over the succeeding several months. Such recurrences are treated as the original abrasion, except a longer period of patching may be needed.

The second class of injuries is burns. These are usually chemical or thermal. Either form is an emergency. The imperative point in chemical burn therapy is *on the spot, immediate, copious irrigation* with water or any bland irrigating solution. Further irrigation may be done in the doctor's office with physiological saline solution or water. It is *most* unwise to wait for or to try and use neutralizing solutions in acid or alkali burns. Local anesthesia is used at once, followed by profuse irrigation then gentle examination to determine the status of the globe and lid linings. Lid eversion is important here to allow search for retained debris or chemical under the upper lid. Fluorescein paper strips, by staining serve best to allow corneal evaluation. It should be known that acid burns show the full extent of their damage at once or within a few hours but alkali burns worsen over a 48-72 hour period. This knowledge allows more accurate prognosis. In addition to continued use of a local anesthetic for comfort, the pupil ordinarily should be dilated by a cycloplegic such as homatropine or atropine. Antimicrobials are not imperative. Steroids are usually of value in lessening inflammatory reactions. Prevention or minimization of adhesions is obtained by the frequent application of bland ointments or, occasionally, conformer use. The eye should be patched.

Burns involving the skin of the lids are handled as ordinary burns elsewhere, recognizing that lid skin is more delicate than skin elsewhere. Often the lids may be so edematous as to prevent voluntary eye opening. Even so, in such instances it is mandatory to spread the lids gently, under local or general anesthesia, by speculum or better, retractors, avoiding any pressure, so that the globe may be evaluated. Ice compresses in the range of ten minutes four times daily are of value in reducing edema when not due to infection. In swelling secondary to infection, I favor warm or hot compresses.

A somewhat special burn is that of the cornea following exposure to ultra-violet

light, usually either by injudicious use of a sun-lamp or by watching an arc-welding light without protection. These burns almost invariably come to full flower about two-four a.m.—10-12 hours after exposure. They are exquisitely painful and produce severe photophobia, lid spasm, and lacrimation. Immediate relief is obtained by a local anesthetic, cold compresses and an analgesic. They are invariably self-limited and rarely result in any permanent scarring. This allows the patient to be comforted in his agony which at times is compounded by fear of resultant blindness.

Time precludes discussion of the gas burns encountered in chemical warfare other than to list the three types: convulsants or nerve gases, skin irritants or blister gases, and lacrimators or tear gases. They all produce local chemical burning of various degrees. The amount of permanent damage varies—the blister gases are by far the most serious.

The third category of injuries, that of blows, may produce conditions ranging from lid or globe lacerations or contusions of varying degrees to severe orbital fractures with accompanying eye dysfunction or damage.

The handling of lid lacerations deserves comment. Simple lid lacerations present no problems and are sutured with 5-0 or 6-0 black silk. Deep, or through and through lacerations demand closure in the respective layers of lid anatomy—simply whipping a suture through the entire lid thickness is to be frowned upon. Lid margin lacerations, if through and through, usually require and are best handled by what is known as "halving." Instead of edge to edge closure, two offset layers are created and utilized. Simple

Edward A. Dunlap, M.D., graduated from Western Reserve University School of Medicine in 1935 and is certified by the American Board of Ophthalmology. He is Associate Professor of Clinical Surgery (Ophthalmology) at Cornell Medical College.

Doctor Dunlap is affiliated with the American Academy of Ophthalmology and Otolaryngology, the New York Ophthalmological Society, the Association for Research in Ophthalmology, the Pan American Association of Ophthalmology and the New York Academy of Medicine.

edge to edge suturing will frequently result in development of unsightly notching of the margin, though the immediate closure appearance may be excellent. Halving prevents this. Up to one-third of a lid may be lost by injury or deliberate excision but the halving procedure will usually give a wholly presentable and normally functioning lid. Lacerations in the region of the inner canthus must be inspected for lacrimal canaliculus severance. If present, a serious attempt should be made to find both ends of the severed canaliculus and thread them with wire, gut, or plastic tubing, preserving canal patency as the surrounding laceration is repaired. While one canaliculus can ordinarily be sacrificed with no significant tearing resulting, this should not serve as an excuse for disregard of proper repair.

Any through and through lid laceration should lead one to look for an accompanying globe laceration. If existent, small, and only conjunctival, it may be left alone; or if long, closed with 6-0 silk, using running or interrupted sutures. Scleral lacerations require gentle suturing. A through and through scleral laceration with loss of globe contents is a catastrophe. Even if small, a through and through globe laceration involving the ciliary body may demand enucleation as a prophylactic maneuver against sympathetic ophthalmia. There is a growing trend toward retaining these globes since we now have ACTH and steroids. The decision to enucleate is a matter of judgment reserved for the ophthalmologist. Final judgment on enucleation may ordinarily be reserved for a few days without the risk of sympathetic ophthalmia since this complication rarely shows before a two week period and usually between the fourth and eighth weeks. Steroids should *not* be given prophylactically. In some instances of severe globe mutilation with loss of most or all of the globe contents, enucleation may be in order regardless of the question of sympathetic ophthalmia.

Corneal lacerations if superficial may be left alone or may be covered with a conjunctival flap, partial or complete. If deep and gaping, such lacerations require direct suturing best left to the ophthalmologist. If such care is not available, delicate closure

with gut or silk is indicated; or the general practitioner might cover it with a flap alone. These flaps may be taken down in about ten days. A through and through corneal laceration is usually recognized by the presence of a shallow or flat anterior chamber and a distorted pupil resulting from iris plugging the rent. Iris may even be protruding through the laceration. If an ophthalmologist's services cannot be obtained, treatment is by clean severing of the prolapsed iris after grasping it and pulling it out a minute amount farther through the laceration. This maneuver tends to prevent incarceration of the iris in the cornea. Corneal repair then follows, preferably by direct suturing or as a second best procedure, conjunctival flap coverage. Cycloplegic and antimicrobial use are mandatory in these cases. Tetanus antitoxin administration while at the discretion of the physician is usually advisable.

A discussion of non-penetrating contusion-type injuries begins with the standard "black eye." Treatment may consist simply of dark glasses and warm compresses, or may include daily injections of one c.c. of chymotrypsin, or local injection of 20 units of hyaluronidase. There is increasing use of buccal enzymes but their value is not yet conclusively proven.

A commonly seen condition either from trauma or more often on a spontaneous basis is subconjunctival hemorrhage. It may range from a small spot to total corneal encirclement by severely ballooned bulbar conjunctiva. A subconjunctival hemorrhage of any size invariably frightens the patient. While the eye may look terrible, the hemorrhage does no damage to the eye or its vision. Reassurance on this point is of great aid to the patient. While duration is self-limited, absorption is slow but the only problem is cosmetic. Cold compresses and local vasoconstrictors may be used for the first 24 hours after the hemorrhage appears; after that time it is more logical to use hot compresses. Enzyme therapy is not necessary.

More severe contusions to the globe may result in anterior chamber hemorrhage, dislocation of the lens, hemorrhage into the vitreous, choroidal rupture, etc. Hyphema, or blood in the anterior chamber, is potentially dangerous if present in an amount sufficient to produce increased intra-ocular

pressure. Management of simple hyphemas consists of bed rest and *bilateral* full-time eye occlusion for several days. The use of cycloplegics and miotics is open to varying opinions among ophthalmologists. There is no consistent rule to follow. While hospitalization is not imperative, it is often advisable if available to guard against or handle complications if bleeding continues. Cases of bleeding severe enough to result in secondary glaucoma often do poorly and carry a very guarded prognosis. Management of these belongs to the ophthalmologists, some of whom now use anterior chamber instillation of fibrinolysin in selected cases.

Orbital fractures may occur separately or as part of a general skull or maxillo-facial trauma. If no bone displacement occurs, damage is usually negligible and any accompanying eye muscle disturbance usually recovers spontaneously. This spontaneous recovery of eye muscle dysfunction if dysfunction occurs is also true in most cases of concussion. If displacement of the orbital rim occurs, which is common in fractures, involving the zygoma, surgical manipulation is in order to restore proper position.

Traumatic ptosis is not uncommon. It is not a surgical emergency and may always be referred.

A special type of orbital fracture known

as "blow-out" fracture is being seen with increasing frequency. It is sometimes difficult to find on x-ray examination. The condition consists of an intact orbital rim, so that no fracture is detected by palpation, but the floor of the orbit or occasionally the roof is blown out and the orbital contents are displaced to a varying extent. This usually results in disabling diplopia and often cosmetic disfigurement. These fractures usually result from a flat blow such as a baseball striking the globe head on and compressing the orbital contents before the orbital rim can stop or deflect the blow. Early recognition is *most* important because early surgery is imperative—delay of over a week may well result in failure of constructive surgery to elevate the globe properly, so that permanent motility dysfunction with diplopia results. Surgical repair of such a fracture often demands the joint effort of ophthalmologist and otorhinologist.

In summary the general practitioner can play a crucial role in many ocular injuries. Careful examination coupled with knowledge of what to do in various situations may well result in his being responsible for saving a person's eyesight, always a most gratifying accomplishment. □

525 East 68th Street, New York 21, New York

Attention! County Society Officers

An important conference on Professional Liability Insurance will be conducted for officers of county medical societies on Sunday, November 24th, at the Skirvin Hotel in Oklahoma City. Restoring the financial balance of the association-approved insurance program will be the purpose of the statewide meeting.

Mr. J. C. Parish, Secretary of the St. Paul Fire and Marine Insurance Company, will be on hand to discuss the background of the program, recent claims experience figures, and the new classification system being used for premium rating purposes. Attorneys for St. Paul will present the legal aspects of claims prevention, out-of-court settlement, trials, the malpractice climate in Oklahoma, and common pitfalls which result in lawsuits. Claims men for the company will discuss incident reporting procedure, claims processing, and reserves for losses.

Participants will be hosted to a concluding dinner by the officers of St. Paul.

Recent Advances in Thrombo-Embolicism*

WILLIAM E. JAQUES, M.D.

THERE HAS BEEN little information added to the morbid anatomy of thrombo-embolism since the original description by Virchow.¹

Welch² in his magnificent review article in 1899 states "there is scarcely another pathological doctrine of equal magnitude, the establishment of which is so largely the work of a single man." The first investigator to make a systemic experimental study, mainly in frogs, of the mode or formation of thrombi, was Zahn.³

The purpose of this review is not to discuss the general pathology of thrombo-embolism, except where necessary, but rather to mention some of the recent advances in the pathophysiology of this condition in the light of experimental approaches with more refined techniques.

THROMBOSIS

The basic tenets as regards the pathogenesis of thrombosis, remain as originally described by Virchow.¹ These factors are: damage to the intima, stasis and changes in

the coagulability of the blood. Kappel and Alwen⁴ review some of the sophisticated refinements of these early observations.

Changes in the vascular wall can be produced by mechanical, thermal, chemical and bacterial trauma. Atherosclerosis is frequently followed by the development of mural thrombi. Numerous factors, as in Reynaud's disease, promulgate the development of thrombi through vasospasm. Likewise, the intima may be damaged in thromboangiitis obliterans, Takayasu's syndrome, polyarteritis and changes in the mast cells.

Alterations in blood flow may be caused by gravity, diminished venous return in prolonged immobilization, congestive heart failure, varicosities and extrinsic masses pressing on venous channels.

Hemoconcentration, as produced by hemorrhage, shock and dehydration, may lead to conglutination of the solid elements of the blood. Circulating cryoglobulins may allow intravascular clotting to occur as do gastrointestinal malignancies.

It has long been recognized that prolonged immobilization frequently leads to thrombosis, but lesser periods of immobilization have only recently been observed to lead to thrombi. This became apparent during the *blitzkrieg* of London. Homan,⁵ reported five cases of thrombosis of the lower extremities following prolonged airline flight and automobile rides. It also became apparent that patients over 50 years of age, obese, with

*From the Department of Pathology, University of Oklahoma School of Medicine. This investigation was supported by Research Grant H-3235, National Institutes of Health, U. S. Public Health Service.

normal or subnormal blood pressures, were particularly susceptible to pulmonary embolism as a postoperative complication.⁶

It is becoming more obvious, however, that changes in the coagulability of the blood are superseding mechanical factors as a cause of venous thrombosis.⁴

Migratory thromboses were described by Trousseau in 1865 and have since been associated with his name. This condition is frequently associated with abdominal malignancies and generally precedes the development of clinical cancer. It was generally thought to occur in cancer of the body and tail of the pancreas. Sproul⁷ reviewed 125 cases at necropsy and found deep venous thromboses in 56.2 per cent of cancer of the body and tail of the pancreas and only 9.7 per cent in cancer of the head of the pancreas or other viscera. Perlow and Daniels⁸ found venous thrombosis associated with cancer of the lungs, colon, ovary, stomach, parovarian rest tissue and the pancreas. The relationship of cancer to thrombosis has been suggested to be due to trypsin but this does not explain thromboses in extrapancreatic locations.

Venous thrombosis occurs most frequently in the veins of the lower extremities. Wolf⁹ found thrombi in the deep veins of the legs in 50 per cent of all patients confined to bed. Less commonly, thrombi form in the pelvic plexus of veins, right side of the heart, and rarely in the large veins of the upper extremities. Thrombosis of the dural sinuses is seen in dehydrated infants. Fowler and Bollinger¹⁰ found the source of pulmonary emboli to reside in the heart in 39.3 per cent of cases, abdominal pelvis 26.4 per cent, extremities 20.6 per cent and unknown site in 13.5 per cent.

Many conditions predispose to the development of thrombosis. Byrne¹¹ in a study of 748 patients with phlebitis found cardiac disease in 28 per cent, postoperative complications in 23 per cent, trauma in 11 per cent, infection in 6.3 per cent, varicose veins in 5.4 per cent, childbirth in 5.4 per cent, hemiplegia in five per cent, cancer in 3.7 per cent, idiopathic in 6.3 per cent and miscellaneous conditions in four per cent.

Thrombosis is less common on the arterial side of the circulation. Arterial thrombi occur most frequently as a result of atherosclerosis or hemodynamic changes leading to

turbulence and eddy currents. The usual sites of arterial thrombi are the cerebral circulation, coronary circulation, renal arteries and abdominal aorta. The effects of these thrombi are beyond the scope of this paper.

Mural thrombi also occur in the chambers of the heart following myocardial infarction, proximal to valvular stenosis, myocarditis and in arrhythmias. These may be the source of emboli to the lesser or greater circulation.

There has been a renaissance of the role of arterial thrombosis in atherosclerosis. Duguid¹² feels that atheromata represent organization of mural thrombi in arterial walls, especially if small. Fat content of the atheromata represents a degenerative process in the thrombi. This represents a marked departure in the concept of hyperlipemia and the development of atherosclerosis. Further studies are necessary to reconcile the importance of thrombi and hyperlipemia.

The response of the vascular endothelium to injury has been studied meticulously by McGovern.¹³ The normal endothelium is composed of flattened pavement cells separated by wavy argyrophilic cement lines. The long axis of the endothelial cells is parallel to the direction of the vessels. In children, some of the cells are binucleated, while in older individuals multinucleated cells are prominent. Mast cells are most numerous in the intima.

Venous stasis causes an increase in argyrophilic cement substance and even in the endothelial cells. Following injury, a substance is liberated which converts the precursor of cement within the endothelial cells to argyrophilic cement granules and leads to a further development of cement substance by the endothelial cells. A metachromatic substance is produced possibly from mast cells which seeps through the cement substance of endothelial cells and coalesces as a thin film

William E. Jaques, M.D., graduated from McGill University Faculty of Medicine in 1942 and is now Chairman and Professor of Pathology at the University of Oklahoma School of Medicine.

Doctor Jaques has been certified by the American Board of Pathology and is a member of the American Society of Experimental Pathology, the American Association of Pathology and Bacteriology and the International Academy of Pathology.

over the endothelial surface. This film, in turn, protects against the development of thrombi. In severe injury, there is an impairment of cement and the endothelial surface becomes inadequately covered and thrombosis occurs. It is postulated that heparin is the metachromatic substance formed by the mast cells and that inadequate heparin production or a deficiency in cement, which serves as a vehicle for the heparin, leads to thrombosis.

EMBOLISM

Emboli most commonly result from the detachment of preformed thrombi in the systemic veins. Since the majority of thrombi develop in the veins of the lower extremities or pelvis, the most common site of emboli is the lungs. The greater portion of this section will deal with pulmonary emboli produced from systemic venous thrombosis. It is recognized, however, that thrombi formed *in situ* in the pulmonary arterial system are more frequent than is generally considered. Sick cell disease may lead to the development of thrombosis in the pulmonary arteries with resultant infarction. Moser and Shea¹⁴ describe seven cases of sick cell states with pulmonary complications. It was suggested that as a consequence of the presence of large quantities of S-hemoglobin that patients suffered pulmonary thrombosis *in situ* leading to frank pulmonary infarction.

A brief review of the functional anatomy of the lesser circulation seems pertinent before discussing embolic phenomena. One recalls that there is a dual arterial and venous system. The role of the bronchial circulation is well documented in congenital heart disease but its significance in miliary pulmonary embolism would seem to be a fruitful field of research.

The right ventricular mean pressure is 10-15 mm. of mercury and the lesser circulation is a low pressure circuit. Many arterioles are closed in a resting state but become open and patent with an increased circulatory load. This is regulated by the "critical closing pressure." An increase in pulmonary venous pressure influences the critical pressures only at higher levels.¹⁵

The lesser circulation possesses an enormous reserve capacity. It can tolerate phys-

ical exertion with an increase of right ventricular cardiac output of 250-300 per cent without an increased pulmonary artery pressure probably by overcoming the critical closing pressure and perhaps by additional arteriolar dilatation. More than one-half of the vascular area of the lungs can be excluded without a rise in pulmonary artery pressure with a constant cardiac output. Only when 60-70 per cent of the pulmonary vasculature is excluded, is there a rise in pulmonary artery pressure. The outstanding exception to this observation is the presence of congestion of the lungs.

It is estimated that 34,000 people die annually from pulmonary embolism.¹⁰ In a review of 4,391 complete necropsies, 606 patients had pulmonary emboli, amounting to 13.8 per cent of cases.¹⁶ The emboli were immediately responsible for death in 198 cases, contributory in 190 and of minor significance in 218. Barker, *et al.*,¹⁷ found a higher incidence of venous thrombosis in females while pulmonary embolism was more common in males. They also noted a higher mortality rate in men.

Pulmonary embolism occurs at all ages but becomes more common after 40 years of age. Interestingly, the incidence of pulmonary embolism is increased in females up to the age of 50, after which it becomes more frequent in males.¹⁷

The clinical diagnosis of pulmonary embolism is still a difficult problem. Only 7.1 per cent of patients with autopsy-proved pulmonary embolism had a definite clinical diagnosis in a series studied by Coon and Collier.¹⁶ The most frequent clinical signs are dyspnea, sharp chest pain, hemoptysis and pleural friction rub.

The pleural pain results from occlusion of a lobar or sublobar arterial branch with development of an infarct. This produces tension on sensory nerve endings in the pleura. Pericardial or substernal pain, indistinguishable from that of acute myocardial infarction, occurs in a high percentage of patients dying from massive pulmonary embolism. The mechanism for this is believed to result from acute pulmonary hypertension with stimulation of sensory nerve endings in the vascular wall.¹⁸

The emboli from systemic veins pass through the right side of the heart to various parts of the pulmonary arterial system. How-

ever, a few cases have been reported in which large coiled emboli have obstructed the out-flow tract of the right ventricle and caused sudden death.¹⁹ We recently reported a case of thrombo-embolism which, by a curious twist of fate, the thrombus became entrapped in the chordae tendineae of the tricuspid valve and produced a major obstruction to blood flow through the tricuspid orifice.²⁰

The cause of death in massive pulmonary embolism presents no problem. It results from pure mechanical blockage of the lesser circulation.²¹ This results in an elevation of pulmonary artery pressure, a fall in systemic pressure, right heart dilatation and cardiac failure.¹⁵ Death is usually rapid but cases have been reported following massive embolism with survival and congestive heart failure occurring years later.

The mechanism of death and indeed the development of pulmonary hypertension in smaller showers of emboli, is still conjectural. There are two current concepts regarding the pathogenesis of this process, namely, mechanical blockage and neurogenic.

It was originally proposed by Villet²² that mechanical obstruction was the important factor. He injected beads of 100-200 microns in diameter and noted no disturbance in dogs or guinea pigs until considerable amounts were injected, namely, enough to produce mechanical obstruction.

In 1956, Williams came to a similar conclusion.²³ Other investigators support the neurogenic theory.^{24, 25} Our own observations would lend credence to a reflexogenic mechanism.²⁶ If autologous clots or glass beads are introduced intravenously into dogs, there is a prompt rise in pulmonary artery pressures. This falls after 30-90 minutes, but generally is sustained above pre-injection levels. Bilateral cervical vagotomy will counteract this hypertensive response. We feel this is evidence in support of a reflexogenic mechanism. A review by Nelson and Smith,¹⁵ discusses the roles of reflexogenic and mechanical factors. Venoarterial local reflex arcs have been described which may be responsible for large areas of pulmonary vasoconstriction. It is also postulated that liberation of humoral substances by the occluding thrombus or possibly by the damaged vascular wall may be an important factor. Indeed, serotonin leads to direct smooth muscle contraction of the arteriolar wall. However,

Knisely, et al²⁷ felt that the effects of serotonin were due to the formation of minute emboli. Histamine and acetylcholine by producing pulmonary venous constriction probably are not important. Finally, hypoxia by causing pulmonary arteriolar constriction may be a factor since breathing 100 per cent oxygen frequently corrects the pulmonary hypertension. Halmagyi and Colbalch²⁸ believe that the arterial hypoxemia causes closure of the terminal airways and that this is relatively more extensive than obstruction of the vessels. This may result in perfusion of non-ventilated alveoli with consequent venous admixture.

It was originally presumed that once a patient recovered from the initial insult of a pulmonary embolus no sequelae developed. It is now widely recognized that nonfatal pulmonary emboli organize and produce an increase in pulmonary vascular resistance. This, in turn, leads to right ventricular hypertrophy and cor pulmonale. Indeed, it is now recognized that vascular sclerosis following showers of small pulmonary emboli accounts for a large segment of cases of cor pulmonale. According to Ehrner, et al,²⁹ the clinical diagnosis of cor pulmonale following thrombo-embolism should be suspected in cases having dyspnea with normal lung function tests and no signs of primary lung disease, particularly if there is a history of peripheral thrombosis.

Experimentally, single or repetitive injections of autologous clots leads to sustained pulmonary hypertension in dogs. The persistent elevation in pulmonary artery pressure correlates rather well with the organizing and organized emboli with compromise of vascular lumens and an increase in pulmonary vascular resistance.

The brain, lower extremities, spleen and kidneys are most often affected by arterial embolism. Emboli to the brain most commonly arise from thrombi in the left chambers of the heart. In young individuals, mural thrombi in the left atrium associated with rheumatic endocarditis are a common cause. In later life, arrhythmias and mural thrombosis following myocardial infarction serve as the origin of cerebral emboli. It should be emphasized, however, that emboli may arise from thrombi in the venous circulation. These thrombi may become detached and reach the brain through a simple shunt

as in a patent foramen ovale where they represent paradoxical emboli. The paravertebral plexus, however, affords the avenue of transit in the majority of cases. Likewise, small emboli may pass through the lungs and enter the systemic circulation. Lastly, thrombi formed on the venous side of the lesser circulation probably account for more cerebral emboli than is usually reported.

The early work of Villaret and Cochera³⁰ stresses the role of vascular spasm in experimental cerebral embolism. This same mechanism was thought to manifest itself in human beings. Recently, the role of spasm has been shown to be inconspicuous and of minor importance. Meyer, *et al.*,³¹ using cats and monkeys have shown that vasospasm rarely occurs and then only as a result of endothelial damage by irregular shaped embolic particles. The abnormal vessels formerly identified as zones of spasm appear to be due to fibrin platelet thrombi in areas of endothelial damage.

Definite physiologic and biochemical changes are associated with cerebral embolism. When 40 per cent barium sulfate is injected in a suitable vehicle, this leads to inhibition of respiration and an increase in arterial and cerebrospinal fluid pressures and apnea.³² The venous pressure rises more slowly. There is a moderate enlargement of the P and T-waves in electrocardiograms. The inhibition of respirations is transient if a respiratory death is prevented by the use of a respirator. The emboli which apparently lodge in vessels beyond the major collateral circulation as large emboli; smaller embolic particles will not produce a similar effect.

An ingenious experiment was designed by de la Torre and Mitchell³³ to study the site of these respiratory and cardiovascular responses. They applied clips to the posterior communicating arteries, thus separating the blood supply to the cerebrum and brain stem. Embolization of the carotid arteries caused arrest of the cerebral circulation but no changes were observed in blood pressure, respirations or electroencephalograms. Embolization of the vertebral arteries produced severe cardiovascular and respiratory responses with apnea, systemic hypertension and death. These studies indicated that damage to the brain stem is responsible for the

respiratory and cardiovascular responses.

Embolization of the lower extremities is undoubtedly more frequent than generally reported. The true incidence is difficult to assess due to limitation of dissection of arteries of the extremities by our necropsy laws. The incidence of multiple peripheral emboli has been discussed by McGarity.³⁴

The source of peripheral emboli is most commonly identified as auricular fibrillation and mural thrombosis following myocardial infarction. Atheromatous emboli were first reported in the American literature in 1926 and 41 documented cases have been reported since that time.³⁵ This process is secondary to ulceration of atheromatous plaques, usually just proximal to the aortic bifurcation.

The relationship of renal emboli to essential hypertension is beyond the scope of this review. The role of atheromatous emboli of the kidneys, however, is worthy of mention. It has been noted that atheromatous plaques may become dislodged during aortic surgery. The proximal clamping of the aorta sets up turbulence with ulceration of plaques, reverse of flow and lodgment of atheromatous emboli in the renal vasculature. This may lead to oliguria, anuria and azotemia. Experimental studies by Hardaway, *et al.*,³⁶ suggest that clamping the aorta stimulates autonomic nerves to the kidney, producing a Trueta shunt.

Coronary embolism is an extremely rare condition when contrasted with coronary thrombosis. A review of the literature by Shroder, *et al.*, in 1956 yielded only 54 probable cases.³⁷ The emboli commonly occur in the 30-40 year age group with the left coronary artery being most frequently involved. The majority of coronary emboli arise from vegetations and bacterial endocarditis or mural thrombi on the left side of the heart.

It should be recalled that emboli to the mesenteric arteries result in ischemia and must be considered especially in patients with cardiac arrhythmias.

Before dismissing embolization from autologous thrombi, it should be emphasized that septic emboli produce the added feature of infection at the site of infarction and may produce mycotic aneurysms.

FAT EMBOLISM

The incidence of fat embolism depends on whether clinical or histological methods are

employed. On careful study of 110 Korean battle casualties, Scully³⁸ reported an incidence of approximately 90 per cent (autopsy studies) while Wilson and Salisbury,³⁹ in their review of 1000 consecutive battle casualties, found 0.8 per cent with clinical evidence of fat embolism.

A significant degree of fat embolism is rare, except as a sequel of injury to bone or adipose tissue. Fractures, concussion or jarring without fracture and orthopedic operations or manipulations may lead to fat embolism. Severe injury to adipose tissue as in beatings with resultant extensive contusion of subcutaneous tissues produces fat embolism. Likewise, patients dying of extensive burns demonstrate fat emboli but rarely of significant degree.

The concept that fat embolism results from release of depot fat from traumatized tissue is supported by finding myeloid tissue (bone marrow emboli) in the pulmonary vessels. There is, however, evidence that at least a part of the fat is derived from circulating blood lipids. LeQuire, *et al.*,⁴⁰ demonstrated a high moiety of cholesterol in fat emboli. Depot fat contains less than one per cent cholesterol and could not account for the high cholesterol. It has been suggested that shock from trauma could produce an emulsification of blood lipids with a consequent increase in blood lipids, including cholesterol. An increase in blood lipids, including cholesterol, has been reported following stress and trauma.

Fat emboli are most abundant in the lungs but cerebral and renal emboli are frequently reported. The reason for particular localization in the lung, even following arterial injection of fat, is conjectural. The fact that mean capillary pressures are significantly lower in the lung than in the brain, kidney and peripheral vascular bed may be an important factor. Likewise, injury to the endothelium of the pulmonary vessels may be a factor.

Clinically, a pulmonary and a cerebral form of fat emboli are described. The pulmonary form may manifest itself immediately following injury or after a free interval of hours to days. Air hunger, dyspnea, cyanosis, chest pain, cough, blood streaked sputum, tachypnea, pulmonary edema and rales may occur.

Characteristically, the cerebral form usually occurs three to six days after the injury. The patients demonstrate insomnia or somnolence, apathy, amnesia, disorientation, delirium, stupor and finally coma. Paralysis, spasm, convulsions, rigidity and reflex changes may accompany the mental aberrations. Recovery from the cerebral form is unusual.

In suspected cases of fat embolism, examination of the urine may be helpful. The finding of sudanophilic material in the urine confirms the clinical impression.

The fatty liver is becoming a more widely recognized source of pulmonary fat embolism. Durlacher, *et al.*,⁴¹ originally described five instances of massive pulmonary fat embolism in alcoholics without a history of trauma or finding of injury at necropsy. In experimental choline-deficient animals, cirrhosis has developed in rats with the formation of fatty cysts. These cysts have been shown to enter the central veins of the liver and then extend to the lungs. We are impressed with the frequency of fatty emboli and fatty metamorphosis without a history of trauma. It is suggested by Lynch, *et al.*,⁴² that fat emboli in the chronic alcoholic may be the basis for some of the changes observed in the brain of alcoholics. Indeed, it is interesting to speculate that some cases of Wernicke's syndrome may be due to showers of fat emboli rather than to thiamine deficiency.

Halasz and Moraszo⁴³ demonstrated an acute pulmonary hypertension with apnea, arterial hypotension and bradycardia (Jarisch-Bezold reflex) following the intravenous injection of fat. Our studies revealed pulmonary hypotension with no appreciable change in systemic pressures after intravenous injection of fat.⁴⁴ Ectasia of the pulmonary vessels was demonstrated and the pulmonary hypotension was considered the result of decreased pulmonary blood flow. The conflicting results of these two studies may represent a difference in particulate size of the fat emboli.

Most studies of fat embolism mention the absence of late manifestations. Experimental studies likewise show little evidence of organization of fat emboli as encountered in most other embolic material. Indeed, the amount of fat in the vessels is rapidly cleared primarily by the lymphatic system.

In 1941, Steiner and Lushbaugh⁴⁵ reported eight patients with meconium, squames and amorphous material in the pulmonary vasculature during pregnancy. Similar material was found in the renal glomeruli of one case. Uterine tetany or exceptionally strong contractions, meconium in the amniotic fluid, intra-uterine death, oversized baby, multiparity and advanced age of the mother predispose to the condition. The clinical manifestation was shock coming on during labor or soon after its conclusion. Many reports of this condition have since been recorded in the literature.

It soon became apparent that death was not due entirely to mechanical blocking of the lesser circulation by embolic material. Bleeding, particularly from the vagina, was soon observed in cases of amniotic fluid embolism. This led to a study of the clotting mechanism. An incongruous condition developed, namely, amniotic fluid acts *in vitro* as a potent thromboplastin, yet bleeding occurs from the vagina in particular. This bleeding is associated with a lowered plasma fibrinogen content and increased fibrinolytic activity.⁴⁶⁻⁴⁸

Amniotic fluid from human beings or dogs produces similar effects when injected into dogs of either sex.⁴⁹ There is a rapid rise in pulmonary artery pressure with no appreciable change in systemic pressure. The pulmonary hypertensive response falls slowly but does not reach preinjection levels. Repetitive injections produce a stepwise increase in pulmonary artery pressures. Histologic sections of the lungs demonstrate fibrin thrombi and amniotic fluid in the vessels of the lesser circulation. Later, there is organization with eventual eccentric intimal thickening. It is postulated that the initial pulmonary hypertensive response is neurogenic and that the sustained hypertension is due to increased pulmonary vascular resistance due to organized emboli.

In the experimental animal, the clotting defect is localized in the serum with the thromboplastin generation test and is corrected *in vitro* by the addition of barium sulfate absorbed normal dog plasma or serum. The defect is further felt to reside in plasma

thromboplastin antecedent deficiency since the serum of a patient with this defect fails to correct the clotting defect in dogs. Finally, it is apparent that patients not dying from the immediate effects of amniotic fluid embolism may subsequently develop cor pulmonale.

A review of air embolism has recently been reported.⁵⁰ Rarer forms of emboli including bone marrow, liver cells, brain tissue, bone wax and cotton fibers have been described as medical curiosities. □

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800 N.E. 13th Street, Oklahoma City, Oklahoma

ABSTRACTS

BLEEDING IN PEMPHIGUS

A patient is reported with pemphigus vulgaris on prednisone 20 mg. a day who developed a fibrinolysin during an exacerbation of his disease. There were numerous hemorrhagic and denuded lesions and multiple ecchymotic areas over the entire body in addition to the generalized bullous eruptions. The laboratory showed accelerated lysis of the whole blood clot and a reduction in circulating fibrinogen. No circulating anticoagulant was demonstrated but there was a defect in the prothrombin mechanism and evidence of liver damage. These findings regressed on increasing prednisone dosage. The authors propose that the fibrinolytic system was activated by increased proteolytic activity in the patient's serum as previously reported in patients with pemphigus. They also point out that temporary hepatic decompensation may have facilitated this process.

Fibrinolysis with Pemphigus Vulgaris, O'tar T. Norwood, M.D., James W. Hampton, M.D., *Archives of Dermatology*, 87: 466-68, April, 1963.

THE VALUE OF CERTAIN STUDIES IN THE DIAGNOSIS OF CHOLECYSTITIS AND CHOLELITHIASIS*

The authors report 1,000 consecutive private patients who had oral cholecystograms. Of these 67.8 per cent were normal, 70 per cent showed gallstones on the scout film, 50 per cent had non-functioning gallbladders after single and/or double dose of dyes, 70 per cent had gallstones visualized without special techniques, and 27 per cent required special studies to demonstrate the presence of gallstones. Essentially similar findings occurred in 1,000 consecutive patients at a private hospital. The special studies emphasized by the authors consist of upright films with pressure and spot films and right lateral decubitus views. These studies are designed to show small radiolucent stones that tend to layer and become demonstrable with these maneuvers.

The authors point out that in cases suggestive of gall bladder disease by history, these studies are necessary in order to substantiate the diagnosis.

*The Value of Certain Studies in the Diagnosis of Cholecystitis and Cholelithiasis. Edward M. Farris, Bert Mulvey, H. J. Kearns, *The American Surgeon*, 29: 3: 151-154, March, 1963.

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Reprints of the above publications are usually available on request from the senior author, c/o Mrs. Joan Campbell, Veterans Administration Hospital, 921 N.E. 13th Street, Oklahoma City, Oklahoma.

Left Bundle Branch Block

THOMAS N. LYNN, M.D.*

Electrocardiographically left bundle branch block (LBBB) is represented by a QRS deflection which is oriented to the left and posterior and which is prolonged in time to 0.12 seconds or greater. There is usually little difficulty in recognizing this abnormality, however it must be distinguished from the QRS of peri-infarction block and Wolff-Parkinson-White (WPW) syndrome. The former may be recognized by the presence of the typical Q waves of myocardial infarction and the latter by the pre-excitation delta wave and resultant short PR interval.

Left bundle branch block may be suspected from the physical examination if paradoxical splitting of the second heart sound is detected. Normally aortic valve closure slightly precedes pulmonary valve closure, creating a "split" second sound. Respiratory effects on blood flow through the right side of the heart cause a slight variation in right ventricular ejection time, causing the "split" of the second sound to increase during inspiration. When LBBB is present however, aortic valve closure is often delayed such that it follows rather than precedes pulmonary valve closure, and with inspiration, the split of the second sound narrows "paradoxically." Other causes of paradoxical splitting of the second heart sound are related to mechanical factors causing a delay in left ventricular ejection such as may be seen in high grade aortic

valvular stenosis and left ventricular ischemia.

There is little evidence that this conduction abnormality by itself significantly interferes with left ventricular efficiency and its appearance does not seem to indicate a worse prognosis than would the primary disease without LBBB. Once LBBB has appeared in an individual's ECG, the conduction rarely returns to normal, although occasionally it may do so.

In contrast to right bundle branch block (RBBB) which distorts only the terminal portion of the QRS deflection, LBBB disturbs the entire QRS making recognition of other ventricular depolarization abnormalities such as infarction and hypertrophy very difficult if not impossible by usual ECG techniques.

Also in contrast to RBBB which may or may not be related to cardiac abnormality, LBBB almost always is a result of heart disease. Coronary artery disease, whether resulting in a discrete infarction or only diffuse and scattered fibrosis, is the most frequent cause of this conduction abnormality although it may be seen accompanying a variety of diseases affecting the ventricular myocardium including myocarditis, metastatic neoplastic disease of the myocardium, primary muscular diseases such as myotonic dystrophy and infiltrative diseases such as amyloidosis.

*Assistant Professor, Department of Preventive Medicine and Public Health, and Department of Medicine, The University of Oklahoma Medical Center, 800 N.E. 13th Street, Oklahoma City, Oklahoma.

Any physician who is not receiving "Modern Concepts of Cardiovascular Disease" may be included on the mailing list by notifying the Oklahoma State Heart Association, 825 N.E. 13th Street, Oklahoma City 4, Oklahoma.

Dean's Message

Several new services have been established at Children's Memorial Hospital and are available to the physicians of Oklahoma. Among them are expanded programs for heart and cancer patients.

An important development in the Pediatric Cardiology program is the completion of a modern Cardiopulmonary Diagnostic Laboratory which has the latest equipment for diagnostic studies of infants and children with heart disease. Pulmonary function studies in children also will be carried out here.

This new laboratory is under direction of a pediatric cardiologist, a full-time member of the Department of Pediatrics. The laboratory and its additional personnel, along with the open heart surgery program, will provide physicians of the state and region with improved referral facilities for the comprehensive care of infants and children with congenital or any type of heart disease.

A new outpatient tumor clinic called the Children's Oncology Clinic meets at Children's Memorial Hospital at one p.m. Mondays in combination with the Pediatric Hematology Clinic. The term "oncology" was chosen because the use of titles such as "tumor, cancer, etc." has created impressions that complicate the management of patients

in the pediatric age group.

Although the Children's Oncology Clinic is coordinated by the Pediatric Service, other services such as Surgery, Neurosurgery, Orthopedics, Urology and Radiation Therapy also will participate.

The Pediatric Service has joined other teaching hospitals to form the Southwest Cancer Chemotherapy Study Group in a cooperative study of childhood leukemia and solid tumors, including lymphomas, Wilms' tumors, neuroblastomas, bone tumors, brain tumors, soft tissue sarcomas, and other malignancies. A number of cancer chemotherapeutic agents are available without charge through the Children's Oncology Clinic. All patients are returned to their referring physician after treatment.

These and other recently developed services play an important role in the teaching program for students, house officers, and other trainees at the Medical Center.

Referral of patients from physicians to these clinics is invited and arrangements for referral may be made by calling or writing the Director, Pediatric Outpatient Clinic, or the Pediatric Admitting Resident, Children's Memorial Hospital, University of Oklahoma Medical Center, 800 N.E. 13, Oklahoma City, Oklahoma.

Mark R Everett

WELFARE HEALTH CARE PROGRAMS CURTAILED

A continued rise in utilization of the health care programs operated by the Oklahoma Department of Public Welfare has brought about the second cutback in six months in payments to "vendors" of health services.

In a letter to physicians and hospitals, dated October 28th, Mr. Lloyd E. Rader, Director of the Department of Public Welfare, announced certain restrictions in the programs effective November 1st.

In brief, the new regulations are described as follows:

- Physicians will take a cut in payments for in-patient medical care. For the first day of hospitalization on medical cases, the doctor will receive \$15.00, and for the next four days, he will receive \$5.00 per day, totalling a maximum potential fee of \$35.00. This is a further reduction of the curtailed payment plan which was effective on June 1, 1963, under which a physician could receive up to \$50.00 for a medical case (\$5.00 per day for ten days). Prior to the June 1st cutback, a physician could receive up to \$75.00 for a medical case (\$5.00 per day for fifteen days).

Surgeons will continue to receive the reduced rate established with the June 1st cutback, which is 63.75 per cent of the approved fee schedule. Before June 1st, the welfare department's compensable rate of pay was 75 per cent of the approved fee schedule.

Another restriction will prohibit additional payments to a physician for medical cases re-admitted to the hospital within a ninety day period. Surgical cases will not be subject to this time restriction.

- Hospitals will also take a setback in their rates of compensation.

Previously, hospitals were paid on a percentage of total *per diem* costs (up to a ceiling of \$26.96 per day). On June 1st, hospitals were cut to 90 per cent of such costs, and now most of them will be held to 90 per cent of *prime costs*, which excludes the former allowance for depreciation.

- Hospitals will be "obliged" to maintain Utilization Committees consisting of two or more staff physicians.

- Compensable hospital care will be reduced to ten days per admission, and extensions of up to eleven additional days may be authorized by the Hospital's Utilization Committee. Following the June 1st curtailment of the programs, hospital care was authorized for fourteen days per admission, with a seven day extension available if the doctor certified the medical need.

Background

Adult recipients of welfare are offered the health care programs through an individual monthly premium of \$18.00 each, representing state and federal matching funds. The actual expenditures since 1961 have been exceeding the budgeted premiums, but surplus sales tax funds in the Department of Public Welfare accounts made it possible to pay the overdraft.

However, the 1963 state legislature saddled the department with additional financial responsibilities, such as the operation of institutions for the mentally retarded, and a pay raise for pensioners. The net result was that surpluses were drained off and there is insufficient money at the present time to pay more than the \$18.00 per month health care premium budgeted for each recipient.

For more than a year, the Department's Professional Advisory Committee and the appropriate committees of the vendor associations (medical, osteopathic, nursing home, hospital and osteopathic hospital associations) have been wrestling with the problem of continued utilization in excess of the budgeted amount, and various steps have been taken in an attempt to restore financial balance in the programs.

Hospitals with apparently high utilization rates have been visited by medical - osteopathic - hospital teams, physicians have been admonished to try to slow down the utilization, and, finally, the June 1st curtailment in payments was enforced. When it failed to bring expenditures within the budgeted figure, the Department asked the vendor associations to make further recommendations for economy.

Joint Meeting

On September 15th, representatives of the Oklahoma State Medical Association (Public Welfare Committee), the Oklahoma Osteopathic Association, the Oklahoma Hospital Association, and the Oklahoma Osteopathic Hospital Association met at OSMA headquarters in Oklahoma City.

It was generally decided that reduced payments would have to be taken on a temporary basis, but the joint group further believed that benefits to welfare recipients would also have to be restricted if utilization was ever to be controllable.

The groups agreed to advise the Department of Public Welfare to effect the following policies in the program until financial balance could be restored and payments raised to former levels:

- Educational efforts should be continued by the vendor associations (accepted by the welfare department).

- Hospitals should be urged to establish Utilization Committees to review welfare admissions periodically (accepted by the welfare department).

- In-patient medical payments and re-admission policies should be

changed, as previously described (it was the feeling of physicians and osteopaths that a shorter pay period would encourage earlier discharge. The re-admission policy, while quite restrictive as far as welfare department payments are concerned, would still permit physicians to re-admit patients within the ninety day period as private patients).

- Hospital payments should be cut, as previously described, and the compensable length-of-stay should be shortened to ten days per admission. Extensions of up to eleven days should be authorized on the physician's recommendation (accepted by the welfare department, but the policy on extensions was modified by the department's advisory committee to require authorization from the hospital Utilization Committee).

- The total number of days of authorized in-patient hospital care should be limited to thirty days per calendar year, subject to adjustment upon the recommendation of the hospital Utilization Committee (the practicability was questioned by the department, and the advisory committee agreed to defer decision on this recommendation).

- Out-patient professional visits to nursing home patients and patients in their own homes should be limited to one compensable visit per month (opposed by the department, and passed over by the advisory committee).

- The Department of Public Welfare should deduct \$1.50 per day from monthly subsistence grants during periods of hospital confinement (opposed by the department as being unworkable).

OSMA Committee Position

In helping form the recommendations described above, the Public Welfare Committee of the Oklahoma State Medical Association recognized the necessity for a stopgap move to bring expenditures within the available premium. However, the committee also believes that any long-range solution will require major changes in the design of the health care programs.

It was this thought which prompted the unsuccessful attempt to limit hospital days to thirty per year. There is general agreement among the vendor associations that welfare recipients must be given an incentive for careful use of the benefits provided, and it is hoped the Department of Public Welfare has not closed the door on negotiations in this regard.

At the present, physicians will continue to bear the brunt of responsibility for utilization. Patients are relieved of all financial responsibility and there is no other available deterrent to retard increasing demands for hospitalization. Yet it must be recognized that physicians are singularly empowered to admit and discharge welfare patients according to life-endangering or sight-endangering needs. The OSMA Public Welfare Committee has repeatedly recommended judicious use of the programs, and the November 1st cut-back did not come without warning.

On a previous occasion, the committee suggested the conversion of the programs to a form of prepaid health insurance, to be handled by Blue Cross - Blue Shield or a commercial insurance carrier. This proposal has not been enthusiastically received to date, but the idea has not been abandoned by the OSMA committee. □

Membership Directory Out in January

OSMA members are being contacted for biographical information to be included in the 1964 Membership Directory of the association, which is scheduled for publication in January. A questionnaire has been mailed to each physician for completion and return to OSMA headquarters before December 1st.

The new directory will have several innovations. For instance, it will be presented in a handier case, 5½" by 8½", and will include physicians' telephone numbers for the first time.

Besides name, address and telephone number, biographical information will be included, such as

date of birth, school and year of graduation, and specialty designation. General practitioners may identify themselves with a "special interest." A separate roster will provide a breakdown of the OSMA membership by county of residence.

Directory publication will be financed by advertising and by sales of individual copies to other organizations and individuals. Each OSMA member will receive one free copy, and may order additional copies at one dollar each, which is the approximate cost of printing.

The accuracy of information printed in the directory will be established by the questionnaire and through verification by county society secretaries and OSMA records.

All OSMA members are urged to return the questionnaire card by December 1st. □

Pediatric Colloquy To Be Held in Tulsa

"Abnormalities of Early Life" will be the theme of the Fifth Annual Pediatric Colloquy sponsored by Hillcrest Medical Center, December 6-7, 1963 in Tulsa.

Topics to be discussed will be Congenital Anomalies, Enzymopathies, Fetal Environment, Obstetrical Anesthesia, Resuscitation of the Newborn, Evaluation of the Distressed Infant and Psychic Development of the Infant.

Five guest speakers appearing on the program will be: Virginia Apgar, M.D., Director, Congenital Malformations Division, National Foundation, New York; Murdina Desmond, M.D., Associate Professor of Pediatrics, Baylor; Henry Kirkman, M.D., Associate Professor of Pediatrics, University of Oklahoma Medical Center; James A. Merrill, M.D., Professor and Head of the Department of Gynecology and Obstetrics, University of Oklahoma Medical Center; and James T. Proctor, M.D., Medical Training Director, Children's Medical Center, Tulsa.

For details write to James G. Coldwell, M.D., Hillcrest Medical Center, Utica on the Park, Tulsa, 4, Oklahoma. □

OSMA To Host Student AMA

The annual OSMA dinner for members of the University of Oklahoma Chapter of the Student AMA is scheduled for Friday evening, November 22nd, at the Huckins Hotel, Oklahoma City.

An estimated 300 students and wives will attend the meeting, which highlights the annual activities of the student group. The OSMA will be represented by its general officers and trustees, as well as by physicians participating in the school's preceptor program.

Medical student Jack Connally, president of the Student AMA, is making arrangements for a featured speaker. Also appearing on the program will be Joe L. Duer, M.D., OSMA president, and Mr. Connally.

The event is sponsored each year by the OSMA Board of Trustees. "It

provides an excellent opportunity," Doctor Duer said, "for practicing physicians to get better acquainted with their future colleagues, and the students sincerely appreciate the fellowship as well as the support given their organization by the OSMA." □

Professional Liability Conference Is 'Command Performance'

A statewide OSMA Conference on Professional Liability is scheduled for Sunday, November 24th at the Skirvin Hotel, Oklahoma City. It will begin at 3:00 p.m. and will conclude with a social hour and dinner starting at 5:30 p.m.

Officers of all county medical societies and general officers of the OSMA are being urged to consider the meeting a "Command Performance" by the host group, the OSMA Council on Insurance.

According to Council Chairman

Dave B. Lhevine, M.D.: "There is a growing need for improved education on the important subject of medical malpractice, and the conference program is designed to help the responsible leaders of organized medicine reverse the current trend toward unmeritorious claims. In addition," he added, "medical leaders have the continuing objective of improved patient care."

The attendance goal is 100 per cent representation from all county medical societies. Expert speakers from Oklahoma and elsewhere will participate on the afternoon program, which is designed as a forerunner of similar meetings at the county medical society level.

"We do not need to tell physicians that a real problem exists in Oklahoma," Doctor Lhevine said, "but we do want to improve professional understanding of the situation and start a concerted effort toward its improvement." □

Now Is The Hour . . .

The King-Anderson Bill, HR 3920, will be debated in the House Ways and Means Committee between November 18 and 27.

While none of our Oklahoma Representatives are members of this Committee, they do have colleagues on the Committee who will listen to them. And, our Oklahoma Representatives will listen to YOU!

WRITE THEM TODAY. Ask your friends in other businesses and professions to write them TODAY.

ONLY YOUR OPPOSITION can keep this bill "in committee" which, in effect, means its defeat for this session of Congress.

TODAY .. DOCTOR .. PLEASE

Genes and Immunity To Be Highlight of AMA Meeting

An outstanding feature of the 17th Clinical Meeting of the American Medical Association, Dec. 1-4 at Portland, Oregon, will be a symposium on "Genes, Chromosomes and Immune Mechanisms," Doctor Huldrick Kammer, chairman of the Scientific Program committee, announced.

The symposium will be held on Monday, December 2, the second day of the meeting. The same subject will be covered in a guest lecture on Tuesday morning by Rupert E. Billingham, Ph.D., of the Wistar Institute, Philadelphia, a world authority on tissue immunity. He collaborated with Peter Brian Medawar, of London, who won the Nobel Prize in Medicine in 1960.

Doctor Medawar, received the Nobel Prize for his distinguished contributions to the baffling but highly promising field of tissue transplantation and acquired immunologic tolerance. His main work was concerned with problems of tissue grafting and with tissue inheritance and differentiation. In 1948, at the request of the Medical Research Council, he undertook, with Doctor Billingham and other associates, tissue grafting in cattle to determine the distinction between identical and non-identical twins.

In the course of these and other investigations, he confirmed the theories of the noted Australian scientist, Sir Macfarlane Burnet, with whom he shared the Nobel Prize.

Joining in a panel discussion on genes, chromosomes and immune diseases late Monday afternoon will be Doctors Robert Koler, moderator of Portland; Levin Grumbach, New York; Arno Motulsky, Seattle; Carl Pearson, Los Angeles, and Robert Blizzard, Baltimore.

Immunization, with special emphasis on the viruses, will be covered on Tuesday's program, along with cancer of the breast.

Outstanding authorities in the diagnosis and treatment of breast can-



Alumni Association Names New Officers

The Alumni Association of the School of Medicine, University of Oklahoma, at its Silver Anniversary Annual Meeting on October 27, 1963, in Oklahoma City elected as its new officers to guide the organization for the next year, right to left, Powell E. Fry, M.D., Stillwater, Vice-President; Robert W. Lowrey, M.D., Poteau, President; James S. Petty, M.D., Guthrie, Secretary; and Johnny A. Blue, M.D., Oklahoma City, Treasurer.

cer will exchange ideas and discuss the newest forms of treatment. The physicians are Ian Macdonald and Richard Martin of the M.D. Anderson Hospital in Houston, and Doctor Maurice Lenz, emeritus professor of radiology at Columbia Presbyterian Hospital, New York.

Also on Tuesday a number of outstanding specialists will discuss the surgical aspects of infection. The doctors include William Kirby of Seattle; Jacob Fine of Boston; and Edwin J. Pulaski of Washington, D.C. They along with Doctor J. E. Dunphy, of Portland, president-elect of the American College of Surgeons, will close this portion of the program with a panel discussion.

Another highlight of the scientific program will be a day-long Tuesday program on kidney problems, including the newest thoughts on kidney acid-base control. A renal symposium will include an airing of the principles of intermittent dialysis as well as the socio-economic problems associated with keeping such chronic uremic patients alive. □

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Committee on Medicine And Religion Goes To Work

October 20th, 1963, was the date marking the official kick-off meeting of the OSMA's Committee on Medicine and Religion, held at OSMA headquarters in Oklahoma City.

The committee's membership is comprised of six physicians, six clergymen and one member of the Woman's Auxiliary to the OSMA. The kick-off meeting, however, did not include clergy members since the first objective was to outline the program plans of the association.

On hand to assist the committee was The Reverend Doctor Paul B. McCleave, Director of the AMA's Department of Medicine and Religion. Also present was OSMA president, Joe L. Duer, M.D., who expressed his reasons for creating the committee. According to Doctor Duer, an evident need exists for better educational liaison and understanding between the physician and the clergyman with respect to "the mental and physical health of the whole man." He also called attention to the desire of the late OSMA President-Elect, Peter E. Russo, M.D., of Oklahoma City, to see the Medicine and Religion activity implemented by the OSMA.

While the meeting was limited mainly to acquainting the physicians and the auxiliary representative with the purpose and organizational goals of such a group, the committee unanimously agreed to sponsor the First Annual Peter E. Russo Memorial Conference on Medicine and Religion in conjunction with the OSMA Annual Meeting in 1964. The committee noted the event would be patterned after the AMA's successful program presented in connection with the AMA Annual Meeting in Atlantic City last June. More specifically, the conference will be held May 3rd in the Persian Room of Oklahoma City's Skirvin Hotel.

Present plans call for a breakfast

meeting and short devotional services followed by a symposium on the interrelationship of medicine and religion, featuring locally and nationally prominent speakers from both fields. Like the AMA conference, the public will be invited.

The statewide conference will not be the beginning nor the end of work in this important and neglected area of mutual responsibility between physicians and clergymen. It will only serve to focus public and professional attention on the subject. The project must be applied at the community level to be effective.

The following physicians, auxiliary member, and clergymen comprise the membership roster of the Committee on Medicine and Religion: Allen E. Greer, M.D., Chairman, Oklahoma City; Elvin M. Amen, M.D., Bartlesville; Marcus S. Barker, M.D., Oklahoma City; E. N. Lubin, M.D., Oklahoma City; E. C. Mohler, M.D., Ponca City; L. J. Starry, M.D., Oklahoma City; Mrs. George L. Winn, Oklahoma City; The Reverend Finis Crutchfield, Tulsa; The Reverend Clifford W. Farriester, Pauls Valley; The Reverend J. V. Porter, Oklahoma City; The Reverend Patrick J. Quirk, Oklahoma City; Rabbi Norbert L. Rosenthal, Tulsa; and The Reverend Robert Shaw, Oklahoma City. □

Florida To Host Anesthesiology Seminar

The first annual postgraduate course in anesthesiology will be sponsored by the University of Miami School of Medicine and the University of Florida College of Medicine, January 5-8, 1964 at the Eden Roc Hotel in Miami Beach, Florida.

Theme of the seminar will be "The Cardiovascular System."

Contact Postgraduate Seminar in Anesthesiology, Department of Anesthesiology, University of Miami School of Medicine, Jackson Memorial Hospital, Miami 36, Florida by December 6, 1963. □

Regional Postgraduate Courses Planned

The OSMA's Council on Professional Education has announced plans for its 1964 Regional Postgraduate Education Program, marking the fourth consecutive year for the decentralized program series.

Eight meetings are being scheduled for the months of January through April, at the rate of two a month. Four subjects—concerned with principal organ systems—are each presented twice during the program series.

Subjects scheduled for 1964 are: "The Colon"; "The Central Nervous System"; "The Heart"; and, "The Pancreas." Meetings will be held in Ada, Altus, Bartlesville, Durant, Enid, Lawton, Miami and Woodward.

The over-all program is being planned by R. R. Hannas, M.D., Chairman of the OSMA Council on Professional Education, and Irwin H. Brown, M.D., Chairman of the Department of Postgraduate Education, University of Oklahoma Medical Center. Assisting in the organization of speaking teams are the following O.U. faculty members: C. G. Gunn, M.D.—"The Central Nervous System"; Thomas N. Lynn, M.D.—"The Heart"; W. O. Smith, M.D.—"The Pancreas"; and Jack W. Welsh, M.D.—"The Colon."

All programs will begin at 4:30 p.m. with two hours of lecture, followed by dinner and another two-hour period of lecture and discussion. Program timing and the selection of the decentralized meeting sites are factors in keeping with the general purpose of the activity—to bring high quality scientific meetings to the doorstep of the practicing physician with a minimum infringement on office hours. A registration fee of \$7.50 covers dinner and scientific program.

Each program is approved for four hours credit (Category 1) by the American Academy of General Practice. Program details will soon be mailed to state physicians. □

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DuVal To Be Dean of New Medical School

Merlin K. DuVal, M.D., professor of surgery and assistant director of the University of Oklahoma Medical Center, will resign after January 1 to become dean of the new University of Arizona School of Medicine in Tucson.

His appointment was announced in October by Arizona Regents, who recently granted approval for development of the new institution. Doctor DuVal will have the responsibility for its organization. He said it is anticipated the school will be ready to accept the first class in the fall of 1966.

Doctor DuVal joined the OU medical faculty in 1957, coming here from the State University of New York College of Medicine, Brooklyn. He

was appointed vice-chairman of the Department of Surgery in 1960 and the same year was named coordinator of Medical Center development to work with the Alumni Association of the School of Medicine and other groups concerned with Medical Center growth and progress.

Last year Doctor DuVal became the Medical Center's first assistant director, a position newly-created by University Regents. No successor has been designated.

Doctor DuVal did his undergraduate work at Dartmouth College and received the M.D. degree at Cornell University Medical College in 1946. He completed his surgical residency at the Bronx, New York, VA Hospital.

Just prior to his appointment to the University of Oklahoma, the surgeon received a five-year, \$30,000 Markle Foundation scholarship to support his research activities. The Markle Foundation annually selects some 20 young

medical men over the nation for this award.

He has published many scientific papers in the areas of gastric physiology, the pancreas, and chronic pancreatitis.

Doctor DuVal is currently president of the Oklahoma Surgical Association and secretary-treasurer of the Oklahoma City Surgical Society. Among his other professional memberships are the Oklahoma County Medical Society, Alpha Omega Alpha, Sigma Xi, Society of University Surgeons, New York Academy of Science, American Federation for Clinical Research, American Gastroenterological Association and the International Surgical Society. He is president of Faculty House at the OU Medical Center.

Taking an active part in civic and community affairs, he has been a member of the Governor's Commission for Higher Education and the Board of Directors of the Oklahoma City Chamber of Commerce. □

Tulsa County Honors New Members



The Tulsa County Medical Society honored 24 new doctors, all elected to membership in the past year, at its Annual Indoctrination Dinner at The Mayo, Tulsa, on October 14, 1963. Guest speaker was Doctor Ernest B. Howard, Assistant Executive Vice-President of the American Medical Association, Chicago, Illinois.

Pictured (left to right, above): Seated: Leo Dexter Thomas, M.D., radiology; John L. Ritan, M.D., radiology; Cleve Beller, M.D., internal medicine; Daniel R. Storts, M.D., industrial medicine; Jerry Sisler, M.D., orthopedics; Ronald F. Gates, M.D., ophthalmology; Frank Hladky, M.D., psychiatry; Nelson E. Powell, M.D., pathology; John F. Bolene, M.D., radiology; Abe Oyamada, M.D., pathology.

Standing: Maurice C. Fuquay, M.D., thoracic surgery; C. Maurice Coffey, M.D., dermatology; Marion K. Ledbetter, M.D., pediatric cardiology; Louis E. FitzSimons, M.D., urology; Harold L. Stratton, M.D., anesthesia; Ralph S. McCants, M.D., pathology; Jodie A. Stark, M.D., anesthesia; Floyd F. Miller, M.D., allergy; William E. Hall, M.D., obstetrics and gynecology; C. William Simcoe, M.D., ophthalmology; John M. Hill, M.D., pediatrics; Thomas L. Story, M.D., surgery; and, Denton B. Thomas, M.D., ophthalmology.

OSMA Conference On Mental Health Set

January 26th, 1963, has been designated by the OSMA's Committee on Mental Health as the date to conduct the first statewide Conference on Mental Health.

The Conference will be held in Oklahoma City's Skirvin Hotel and will feature several nationally prominent speakers as well as a number of Oklahoma physicians who will take part in the program. According to the Mental Health Committee, the entire medical profession is invited to the meeting, with particular emphasis on county medical society officers, their mental health committee chairmen as well as auxiliary chairmen, trustees and general officers of the OSMA.

The tentative schedule calls for registration beginning at 9:00 a.m., the opening session at 10:00 a.m. and adjournment at 4:30 p.m.

Concentrated emphasis, the committee reports, is being levied on mental health by the administration in Washington, the Federal Congress, and in Oklahoma a mental health survey study has been launched by the State Health Department. "Because of strong governmental overtures toward mental health," OSMA committee chairman George H. Guthrey, M.D., said, "the purpose of the OSMA Conference on Mental Health is to thoroughly acquaint physicians with the growing problems in mental health; the extent of government intervention; the role physicians should assume; and ultimately, to establish guidelines for physicians to follow in dealing with the Oklahoma mental health survey, anticipated legislation, and other facets of the mental health picture."

The Conference program is divided into an *Opening Session*, *Topical Section Meetings* and a *Closing Session*, Doctor Guthrey indicated

Opening Session

"The *Opening Session* will feature two nationally prominent speakers," the chairman noted, "one covering *The Federal Government's Role In*

Mental Health and the other rendering *The Key Note Address*." He pointed out that the operation of Oklahoma's mental health survey will be explained as well as the project activities of the Oklahoma Association for Mental Health. Moreover, conferees will have the opportunity to participate in a question and answer session by attending the *Roundtable Luncheon* featuring a slate of expert panelists.

Topical Section Meetings

At the conclusion of the *Roundtable Luncheon*, each conferee will take part in one of seven *Topical Section Meetings*. Doctor Guthrey said the section group meetings will cover such mental health topics as: Continuing Education of the Physician; Psychiatric Units In General Hospitals; Federal-State Hospitals; Problems of The Aged; Alcoholism; Mental Retardation; and Emotionally Disturbed Children. Each section group will outline existing problems and make recommendations to effect a solution or improvement, he stated.

Closing Session

Upon completion of topical meetings, the conferees will reassemble into general session. Each topical section leader will report the findings of his section group to the general session and "it is hoped," Doctor Guthrey said, "that from these reports will come reliable information and guidelines for use by the medical profession and its member physicians in dealing with the mental health problems in Oklahoma." □

International Course On Pesticides Offered

An international short course on the Occupational Health Aspects of Pesticides, sponsored by the University of Oklahoma, Institute of Environmental Health and Extension Division and the U.S. Public Health Service has been slated for November 20, 21 and 22, 1963. Location of the three-day program will be the Oklahoma Center for Continuing Education in Norman, Oklahoma.

Cooperating with the sponsors will be the Committee on Agricultural

Health; the American Conference of Governmental Industrial Hygienists; the State Health Department; and, the State Department of Agriculture.

Objective of this course is to provide balanced orientation and information concerning the impact of pesticides on man's environment as it relates to health. Authorities believe potential effects of pesticides on man demand that those with responsibility for health protection be fully informed in regard to the different types of pesticides, safe methods of use and procedures for health protection. Noting the rapidity in the development of new chemicals and the complexities of assessing their relative influences, sponsors feel there is a need for comprehensive study in this field.

Participants

A 30-member faculty will lead enrollees through a three-day discussion on Technical Background, Health Aspects and Protection of Workers. Course participants include medical and public health personnel, business and industrial personnel, research specialists, agriculture and animal life specialists, educational specialists, voluntary and professional assistants, and pest control operators.

Enrollment

Approximate cost of the entire program is \$73.50 which includes a \$50 tuition fee, housing and food.

Additional information is available from Emery A. Link, Extension Division, University of Oklahoma, 555 Constitution Street, Norman, Oklahoma, or, Doctor Carl A. Nau, Director, Institute for Environmental Health, 800 N.E. 13th Street, Oklahoma City, Oklahoma. □

REPORT . . .

(Continued from Page 498)

bers to continue service in Oklahoma or to move elsewhere cannot be accurately determined by the study committee. However, in the 1962 report of AAMC, it is stated: "The school has been remarkably successful in recruiting a distinguished faculty, more interested in teaching and research opportunities than in finan-

cial gain. In view of the manifestly limited number of such persons, and the great number of opportunities elsewhere, through the opening of new medical schools, concern is expressed for the retention of a faculty of the present excellence unless more support can be provided."

• The University Hospitals presently operate 466 beds, and recent utilization has ranged from 79.8 per cent in 1960 to 76.4 per cent in 1962. Of these beds, 167 are restricted to particular uses and cannot be utilized with maximum efficiency throughout the year. Other hospital areas, originally designed for beds, are being used for other purposes because of inadequate space elsewhere in the medical center complex.

The Financing

Much attention has been focused on the availability of Federal matching funds to realize the construction of the proposed \$22 millions facility. At the time H.J.R. 535 was under consideration by the Oklahoma Legislature, the Congress was considering the original version of H.R. 12, an act to provide \$755 millions over a ten-year period for the new construction, replacement and rehabilitation of various health education facilities, as well as for a student loan program.

However, in the final version of H.R. 12, signed into law on September 24, 1963, the ten-year building program was cut to three years and the appropriation for educational facilities construction was shaved from \$750 millions to \$175 millions. H.R. 12 is operational during the fiscal years 1964-65-66, but Congress made it clear that the legislation would be extended at the end of the first three-year period.

The \$175 millions appropriation presently authorized will be subdivided as follows:

• (A) \$105 millions will be available for the construction of *new teaching facilities* for the training of physicians, pharmacists, optometrists, podiatrists, nurses, or professional public health personnel. In this category state funds for medical

school construction may be *matched up to 66-2/3 per cent* by federal funds.

• (B) \$35 millions will be available for the construction of new teaching facilities for the training of *dentists*. *Matching formula: 50-50.*

(C) \$35 millions will be available for the *replacement or rehabilitation of existing teaching facilities* for the training of physicians, pharmacists, optometrists, podiatrists, nurses, professional public health personnel or dentists. *Matching formula: 50-50.*

Thus, due to the earmarking of \$35 millions for dental schools, there will be \$140 millions available for *new construction, replacement or rehabilitation of medical and other teaching facilities*. The total number of schools eligible for assistance under the applicable categories of H.R. 12 is approximately 420, including 89 existing medical schools and six new ones which are planned or underway.

It may be said that competition for the available funds will be lively.

To qualify for the "new construction" category (A), the O.U. School of Medicine must demonstrate that the new teaching hospital will result in a "major expansion" of training capacity, which has been defined as an increase in first-year enrollment of 15-20 per cent. In this instance, the planned O.U. enrollment increase would be adequate for qualification, but there is a further interpretation of H.R. 12 which complicates the picture.

Matching money from category (A) is limited to *the proportionate share of the project which represents a necessary expansion to accommodate an increased medical school enrollment*. In other words, according to an informed Washington official, only the 134 bed increase would probably qualify, since 466 beds of the 600 bed project would fall into the category of replacement (C).

On this basis, a 134 bed increase over present bed capacity would amount to a 29 per cent increase, and this portion would probably qualify for category (A) funds at the maximum Federal matching percentage of 66-2/3 per cent. The balance of the construction project would probably be ruled as "replacement of existing

teaching facilities" and would qualify for category (C) funds at the maximum matching rate of 50 per cent.

It must also be pointed out that merely qualifying for the Federal matching money does not assure receipt of the maximum funds for which a school is eligible. Obviously, H.R. 12 does not contain a sufficient appropriation to issue the maximum permissible grants to all schools which might otherwise meet eligibility requirements.

In the construction of teaching hospitals under H.R. 12, the Hill-Burton hospital construction program must be considered the primary Federal resource, and the Hill-Burton grant, and the matching state funds necessary to earn it, must be deducted from any grant made under H.R. 12. This provision was designed to avoid duplication of Federal grants.

Therefore, on the basis of information currently available to the committee, a *rough estimate* of the maximum potential for Federal funds to help finance the proposed O.U. project may be computed as follows:

Funds	Explanation
\$ 7,000,000.00	State Bond Issue
+ 4,060,000.00	Federal-Category (A) (66-2/3%)
+ 4,970,000.00	Federal-Category (C) (50%)
\$16,030,000.00	Sub-Total
-1,600,000.00	Hill-Burton Grant plus Matching Share From State Funds*
\$14,430,000.00	Maximum Potential, State-Federal

*The Oklahoma Hill-Burton agency presently has an \$800,000 ceiling on single-project grants, which must be matched 50-50 from state funds.

The probability of O.U. receiving the maximum Federal grant(s) is impossible to determine at this time. Federal regulations governing priorities have not been developed, and the exact form of the O.U. application for Federal assistance will have a direct bearing upon the assigned priority and the categories from which Federal funds are to be drawn.

It is reasonable to predict, however, that *Federal funds will not be forthcoming in the quantity originally anticipated* before H.R. 12 was modified by Congress.

Certainly, the O.U. project will deserve serious priority consideration if it competes for funds with better-endowed medical schools in surrounding states. The chances appear excellent that *Oklahoma will*

deserve more than the average state share of the Federal money under H.R. 12, but even the most liberal grant will probably fall short of expectations.

The extension of H.R. 12 after the initial three-year period undoubtedly will make additional Federal funds available to the school of medicine. Such an extension would require additional state matching funds, unless unmatched state bond funds are reserved to match additional Federal funds which are expected to become available.

If the \$22 millions facility cannot be built initially due to limitations of Federal funds, school officials will undoubtedly spend available funds wisely, keeping in mind the eventual goal of expanded teaching and hospital facilities.

According to statements from the authors of H.J.R. 535, which were verified by state government auditors, adequate revenue is available to retire the \$7 millions state bond issue without additional taxes.

Regarding the question of Federal control of the medical school, the following quotation from H.R. 12 is cited:

"Section 726. Nothing contained in this part shall be construed as authorizing any department, agency, officer, or employee of the United States to exercise any direction, supervision, or control over, or impose any requirement or condition with respect to, the personnel, curriculum, methods of instruction, or administration of any institution."

Other regulations in H.R. 12 require minimum standards of construction and wage rates for construction workers.

Conclusion

There are many facets of State Question 411. This committee has explored some of the major considerations in an effort to clarify the issues. Every effort has been made to approach the problem without bias.

Respectively submitted,
Joe L. Duer, M.D., Chairman
Nolen L. Armstrong, M.D.
C. B. Dawson, M.D.
Robert C. Lawson, M.D.
Joe M. Parker, M.D.
Elmer R. Ridgeway, M.D.
Bob J. Rutledge, M.D.
Harlan Thomas, M.D.

15 County Societies Back O.U. Bond Issue

Medical societies representing fifteen Oklahoma counties have endorsed State Question 411 and thereby support the proposal for the state to incur up to \$7 millions in bonded indebtedness for the construction of a new teaching hospital and other improvements at the University of Oklahoma School of Medicine.

The announcement of grassroots action on the question came from Wayne B. Starkey, M.D., President of the Oklahoma Medical Alumni Association and member of the OSMA House of Delegates.

State Question 411 will be voted at a statewide special election on December 3, 1963. If approved, the 1965 Oklahoma legislature will be empowered to pass necessary legislation for the improvement of the physical plant facilities at the medical center in Oklahoma City.

Counties reported to have endorsed the proposal are: Alfalfa County, Blaine County, Custer County, Craig County, Delaware County, Garfield

County, Harmon County, Jackson County, Kingfisher County, Lincoln County, Major County, Ottawa County, Pawnee County, Payne County, and Woods County.

It is anticipated that other county medical societies will consider endorsement of the question at their November meetings. County society activity on the subject has been prompted by the absence of an official position from the House of Delegates of the Oklahoma State Medical Association.

The delegates sidestepped the matter during the annual session in Tulsa last May, declining to take a position on a resolution requesting further study by the Oklahoma Senate. Following consideration of this resolution, no effort was made to pass a resolution either for or against the hospital construction program.

Since that time, however, an OSMA fact-finding committee was appointed, and its report may be found on page 497 of this Journal. □

DEATHS

JAMES G. BINKLEY, M.D.

1880-1963

James G. Binkley, M.D., Oklahoma City physician, civic leader and former city councilman, died October 30, 1963.

A native of Corydon, Indiana, Doctor Binkley graduated from the University of Oklahoma School of Medicine in 1917 where he was later named Professor Emeritus of the Department of Obstetrics and Gynecology. After retiring from his private practice he served as part-time city physician for the Oklahoma City Health Department for 15 years.

He was a charter member of the Oklahoma City Obstetrical and Gynecology Society.

Recognizing Doctor Binkley's service to humanity and loyalty to his profession for over fifty years, the

Oklahoma State Medical Association presented Doctor Binkley with an Honorary-Life Membership in 1962.

R. C. KAYLER, M.D.

1875-1963

Pioneer McCloud physician, R. C. Kayler, M.D., died in Fort Worth, Texas September 19, 1963.

Born in 1875 in Naperville, Illinois, Doctor Kayler graduated from the Rush Medical School in 1900. Later the same year, he moved to McCloud where he practiced until his retirement one year ago.

Doctor Kayler was honored by the Oklahoma State Medical Association in 1952 with the presentation of a Fifty Year Pin expressing appreciation for his loyal humanitarian services for over a half-century.

Miscellaneous Advertisements

WANTED G. P. or Internist to associate with our Medical Arts Group. Furnished office in modern building. No investment. Guaranteed income. Contact Edward D. Greenberger, M.D., Medical Arts Building, McAlester, Oklahoma.

GENERAL PRACTICE group needs additional doctor interested in family practice. Office suite and minor surgical facilities available. Registered laboratory and x-ray technicians, full time business manager and office staff now in operation. New man will have no overhead except rent until his fees are being collected. We offer the luxuries of group practice with the unlimited opportunities of solo practice in a city of 100,000 with no arbitrary restrictions on hospital privileges. Clinic located in large residential area. Address inquiries to University Park Clinic, 4111 Call Field Road, Wichita Falls, Texas.

PEDIATRICIAN, 1958 graduate of the University of Oklahoma School of Medicine, will be available for private practice July, 1964. Interested in either group or solo practice in any Oklahoma town, 25,000 population or more. Contact Robert T. Dooley, M.D., U.S. Naval Hospital, Jacksonville, Florida.

NEW ULTRA-MODERN 19 room clinic with laboratory, physio-therapy and x-ray. Across the street from a three-year-old, 31 bed hospital. Located in a four-county area where there are 11 doctors for 29,000 people. Would prefer to rent space with guaranteed income, but would consider hiring somebody. Contact David Fried, M.D., Hollis, Oklahoma.

LOCUM TENENS needed for two or three months, beginning February 15th. Would like to accept a call for mission service during this period and need a G.P. to look after my practice. Offer includes comfortable home and office, both rent-free, plus all net proceeds from the practice. Contact A. C. Hirshfield, 908 N.E. 50th, Oklahoma City 5, Oklahoma.

WILL LEASE or sell medical building with full facilities for one or two doctors, next door to hospital. Reason for leaving is that I am dissatisfied with solo practice. Contact Lynn C. Barnes, Jr., M.D., The Medical Building, 301 South Locust Street, Nowata, Oklahoma.

OFFICE SPACE for rent, five-room suite, northwest area, Oklahoma City. Share reception room with established practitioner. Excellent opportunity for general practitioner, or specialist. Contact Elmer Ridgeway, Jr., M.D., 3601 North May. WI 3-3344.

EXCELLENT OPPORTUNITY for general practitioner to fill vacancy in three-man cooperative group. All the advantages and none of the disadvantages of group practice. Phone or write William A. Matthey, M.D., 301 Pershing Drive, Lawton, Oklahoma. Elgin 3-5005.

PHYSICIAN WANTED to work full time in university health work in Oklahoma State University, Stillwater. Excellent working conditions, regular hours and many extra benefits. Contact Donald L. Cooper, M.D., Director, Student Health Service, Oklahoma State University, Stillwater, Oklahoma.

BIG SAVINGS on "Returned-To-New" and surplus equipment. Reconditioned, refinished, guaranteed, X-Ray, examining tables, autoclaves, ultrasonics, dithermies, or tables, or lights, and more. Largest stock in the Southwest. WANTED: Used Equipment. TeX-RAY Co., 3305 Bryan, Dallas. (Open to the profession Wednesdays, Thursdays, 9-5. Other hours by arrangement.)

G.P. DESIRES an associate by November or December 1963. Salary to begin, opportunity for partnership at later date. Complete new office facilities in town of over 50,000. Contact Key D, The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

FOR SALE, 1961 red and white, Chevrolet super sports coupe, air conditioned, power steering, power brakes, bucket seats. Also, clinical camera with enlarger. Contact Mrs. Peter E. Russo, VI 3-4953.

G.P. LOOKING for locum tenens opportunity for 30-40 days, prior to May 31, 1964. Contact Key E. The Journal, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

OPENING for general surgeon, internist or general practitioner. Contact James W. Loy, Administrator, The Chickasha Clinic, Chickasha, Oklahoma.

FOR SALE: 1 G.E. R-36 combination radiographic and fluoroscopic unit, 220-V. 60-C Y; 1 P.C. 2 cardiatron #7174; 1 W O 8457 Madrid suction pressure unit; and 1 589 Cameron S M B-25 burl walnut cauterodyne serial #420. Contact R. N. Holcombe, M.D., 534 North 13th Street, Muskogee, Oklahoma.

The Increasing Importance of Continuing Medical Education

TO A CONSIDERABLE EXTENT the ability of medical care will be determined by the ability of the physician (and his colleagues and assistants in allied fields) to assimilate and utilize new information which will be added continuously to the already vast amount of knowledge now available. As the volume of clinically applicable knowledge grew, two principal adjustments were made to the changing situation. The problem was met by dividing the unwieldy whole of the art and science of medicine into compartments or specialties, and more recently into subspecialties and even sub-subspecialties. Also the preparatory curriculum has been gradually lengthened so that a number of entering medical students contemplate about eight years of study before beginning practice. But the growth of clinically applicable information continues, and at an increasing rate. With these wonderful research accomplishments come problems of application which cannot be wholly answered by further subspecialization and ever-lengthening periods of residency.

A substantial portion of the teaching presented in medical schools will become outmoded within 15 years and much of that which was once learned will be forgotten. Also, much of that which is taught will not be thoroughly learned even at the time it is presented. Moreover, it will be possible to present during the four-year curriculum a decreasingly significant fraction of that which later might be useful clinically. It is clear, then, that the effectiveness of the future physician will be even more related to his aptitudes for and attitudes toward continuing education, than to the fund of knowledge he has accumulated upon graduation. Particularly will this be true of the family

physician who will need to have a very broad fund of knowledge.

Continuing Education as a Medical School Function. The situation concerning opportunities, responsibilities and problems in this field were recently summarized by B. V. Dryer in a publication of the Association of American Medical Colleges entitled "Life-time Learning for Physicians" (June, 1962 issue of the *Journal of Medical Education*.) There seems to be rather general agreement to the effect that universities should accept more responsibility in this field. Unfortunately, however, recognition of the responsibility and opportunity has not often led to effective action. The reasons for the tardiness and limitation of response to the need are varied and complex. They include the great magnitude of that which is to be done in proportion to the limited resources of the universities. The imbalance between the generous outside support for research as compared to the proportionately meager support for teaching functions has made it difficult for the medical schools to attract and develop younger faculty members with a primary interest in teaching. Furthermore, teaching manpower formerly devoted almost exclusively to the education of undergraduates is now diluted by its greatly broadened responsibilities for teaching residents and graduate students as well as students in the paramedical fields. Thus the short supply of teaching manpower makes it particularly difficult for the schools to assume still more teaching functions in the field of continuing education. Lastly, the administrative structures of medical schools are designed by custom to carry out research, research training, and teaching functions relating to students and house officers. These organizational patterns have not yet recognized continuing education as a truly integral part of the total educational responsibility.

In recent years a few schools have developed fairly extensive programs for the postgraduate teaching of physicians. With rare exception, however, these activities are not carried on as primary functions of the academic departments who participate in them. Moreover, individuals who are responsible for these programs are very often administrative specialists lacking the academic status of those who carry out "regular" functions of the faculty.

In general the curriculum for American medical students is progressively moving toward greater emphasis on the cultivation of scholarly habits, and away from the comprehensive presentation of medical knowledge as a primary goal. This change in major emphasis will, of course, form a better basis for a continuing education. There are, however, certain problems in creating a curriculum which will effectively launch a lifetime of learning. For example, under the administrative arrangements which prevail at present the medical student has little opportunity for observing the practitioner in a posture of scholarship. Although he may be told that he should direct his efforts primarily toward constructing the framework for a continuing education, he sees few examples which tend to impress this upon him. On the contrary, he is more impressed that he *must* know certain "prescribed" facts to pass courses. He is likely to see the practitioner as a man who, having attained the requisite body of knowledge, requires no further relationships of an academic character. The rather complete administrative separation of the postgraduate teaching programs from the undergraduate functions also tends to give the student the impression that medical education is not a *continuum*.

Continuing Medical Education in Oklahoma. The University of Oklahoma faces a problem which must not be unlike that of most, or possibly all, medical schools. The problem: How to fulfill an increasingly important responsibility for the continuing education of physicians and allied professions with the limited manpower and financial resources available? In our attempts

to meet this challenge we begin with one liability and certain very appreciable assets. The liability is the inadequate operating budget for the Medical School, very modest in proportion to the functions to be served. Special assets of the Medical Center relevant to the further development of programs in Continuing Education include the following:

1. There is a natural and close relationship between the profession and the Medical Center based on the fact that a large portion of the physicians in the area are graduates of the school, that the school is centrally located, and that a majority of the future graduates may be expected to remain in the state to practice. Therefore there exists an unusual opportunity to establish the basis for a continuing relationship with these practitioners-to-be while they are in the Medical Center as students or house officers. The preceptorship program helps to maintain liaison between the school and the practicing profession, as does the participation of practitioners (as faculty members) in our teaching programs.

2. The Postgraduate Office of the Medical School and the Extension Division at Norman have already developed postgraduate programs in health-related fields which are considerably more extensive and diversified than those of most medical schools. Their experience and resources should be quite useful in the further development of activities in this field.

3. Certain very useful physical facilities are already available or potentially available. In addition to the facilities in the Medical Center, the Center for Continuing Education at Norman may be used for some of the programs. This center is the finest facility for continuing education in the nation. In other types of postgraduate activities the Faculty House near the Medical Center will be useful, and improvements are being made in the medical school auditorium.

The Department of Continuing Education. In order to place greater emphasis on this field a Department of Continuing Education has recently been created at the Medical School. The new department will have responsibility for further developing programs which have been successfully

started by the Office of Postgraduate Education. The Postgraduate Office which was started in 1949 will continue its activities on an intensified scale as a unit of the Department of Continuing Education. The programs in health-related professions of the Extension Division at Norman will be planned and conducted in close cooperation with the Department of Continuing Education of the School of Medicine.

Ultimately, the department will consist of a group of teacher-administrators each with particular interests and qualifications in a specific discipline such as surgery, psychiatry, pediatrics and public health. There are several advantages to be expected from such a change in administrative organization. Whereas formerly the continuing education functions were entirely added responsibility for the faculty members, many of these functions can be assumed by individuals with a specific interest and a primary responsibility in the field. This is not to say that creation of a department will relieve the other departments of postgraduate teaching functions. On the contrary, it is expected that the presence in each major department of a person with a special interest in continuing education will stimulate the interest and participation of these departments in continuing education as an integral part of their total academic programs.

A major aim of the new department will be to further strengthen and extend the present postgraduate activities carried out by the Office of Postgraduate Education. However, an objective at least equally important will be to lay more effective groundwork for a lifetime of self-education while the practitioner-to-be is still a student or house officer in the Medical Center. To that end members of the new department will participate in the teaching programs for students and house officers as well as those for practitioners. A very important by-product of the establishment of an academic Department of Continuing Education will be the increased emphasis on the educational functions of the Medical School at all levels of teaching.

The utility of modern teaching techniques and devices such as teaching ma-

chines and television can be further explored by the Department of Continuing Education. Our research interests include inquiry into the present habits, interests and needs of physicians with respect to continuing education, particularly self-education. Probably the continuing education of future physicians will be effected more by the nature of their personal libraries and how they use them than by the courses provided for the instruction of these practitioners. For this reason a major objective of the department will be to teach the physician-to-be how to make extensive and effective use of medical literature.

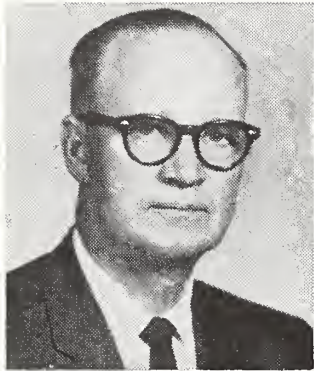
The activities of the Medical School in postgraduate education will be designed to assist and supplement those of professional societies and other groups rather than to replace these valuable functions. We believe that it will be possible for Oklahoma to assume leadership in this important aspect of medical education. Particularly will this be so if it can be shown that the profession wishes to accept a major role in planning, carrying out and utilizing programs designed to provide better medical care through continuing education. — *Kelly M. West, M.D., Professor of Continuing Education, University of Oklahoma School of Medicine* □

Keep That Insurance Policy!

DO YOU throw away old liability insurance policies or certificates?

If so, you're running the risk of facing a lawsuit someday without the benefit of the insurance protection you thought you had. Some Oklahoma physicians have learned the hard way that the burden of proof is on the insured to establish the liability of the insurance company, and others have learned that the statute of limitations offers small comfort in the case of professional malpractice claims.

A long-forgotten patient can come back to haunt you under a 1961 Supreme Court ruling which defers the statute of limitations until the time of discovery of the alleged malpractice. Also, in the case of minors, the statute is not applicable until the patient reaches his or her majority. □



This Season, and the events of this year should cause every American to pause and consider, seriously, some of the philosophies of life. No day—no year—no life is free of adversities. We, as physicians, have heard many times, "Why should this have happened to me?" Why, indeed? Adversities are as much a part of life, if not more so, than are successes, or pleasures, or happiness.

—We should be thankful for disappointments, because from these we learn and make new and better plans.

—We should be thankful for resistances, from these only comes the development of strength.

—We should be thankful for needs, only from them do we develop initiatives, inventions, and progresses.

—We should be thankful there are insecurities, for the vigilance they engender and the efforts that must be expended for their alleviation.

—We should be thankful for challenges, for their stimulating effects, and for their disclosures of fallacies.

—We should be thankful for imperfections, that we may seek for improvements.

—We should be thankful for death, as only through its gates do we find the eternal that lies beyond.

—We should be thankful for Christmas and all of the promises of eternity that it implies; and mindful that suffering followed, that these promises might be fulfilled.

—And for the New Year, and each new day, that the mistakes of the old might be reconciled by the new.

With the events of the year ringing in our ears; the successes, the failures, the joys, and the sorrows,—climaxed by the most tragic event of all for our Nation; we can best serve and best pay our tributes to all who have labored for our Nation, by continuing, unceasingly, our own labors—in our profession, by our services; in our homes, by our devotions; in our communities, by our works and interests; in our nation, by our loyalties to the principles that made it great.

For all of these things and innumerable of the more traditional reasons, I am personally thankful. To all of you for your helpfulness, your co-operation, your services and your sacrifices I am grateful. As Christmas and the New Year approaches let us dedicate ourselves to the freedoms that are real and meaningful—that this nation and this profession might continue to serve the individual in every respect—maintaining dignity, poise and steadfastness. To each of you, my best and most heartfelt wishes for the current season and for the New Year to come.

Joe L. Quigg, M.D.

Occlusive Renal Artery Disease and Hypertension

*Report of Five Representative Cases**

JAMES R. GEYER, M.D.
EDWARD R. MUNNELL, M.D.
CHARLES W. CATHEY, M.D.
WILLIAM L. HUGHES, M.D.

Occlusive renal artery disease may cause arterial hypertension or seriously interfere with renal function. This report illustrates the selection of patients for surgical treatment.

THE MOST COMMON cause of potentially curable arterial hypertension is occlusive renal artery disease. Although its incidence in the entire hypertensive population is unknown, it has been found in 25 to 30 per cent of groups selected for renal angiography and differential renal function tests.^{14, 18} The etiology of the lesions which are usually encountered—atherosclerosis, fibrosis and fibromuscular hyperplasia—is unknown. Since lesions are present bilaterally in about one-third of instances,^{12, 16} the resultant hypertension is not simply due to unilateral renal disease, and arterial repair rather than nephrectomy is the preferred treatment.

The selection of patients with arterial hypertension in whom evaluation of the renal circulation is indicated is a major problem.

*From the Departments of Urology, Surgery, and Internal Medicine, Oklahoma City Clinic, Oklahoma City, Oklahoma.

Criteria for definitive study by renal angiography and differential renal function tests have been documented and may be listed as follows:^{3, 7, 8, 13, 14, 18}

History:

Recent onset of hypertension.*

Onset of hypertension before age 35 or after age 55.

Acceleration in severity of pre-existing hypertensive disease.

History of abdominal pain or flank pain.

History of trauma to a kidney.

Physical Examination:

Bruit in upper abdomen, flank or costovertebral angle.

Malignant hypertension (papilledema), providing there is adequate renal function.

Evidence of widespread atherosclerosis with rapidly progressing hypertension.

Intravenous Pyelogram:

A non-functioning kidney.

Delayed appearance of contrast medium in one kidney.

Disparity in concentration of contrast medium by the two kidneys.

Disparity of one centimeter or more in the length of the two kidneys.

Atrophy of a portion of one kidney (thin cortex; compact, less prominent calyces.)

Calcification near the renal hilus (aneurysm of the renal artery).

*Duration of hypertension of less than two years.

Other:

Abnormal radioisotope renogram.

Abnormal renal scintigram.

The present study illustrates the application of these criteria in selecting hypertensive patients for surgical treatment.

DIAGNOSTIC PROCEDURES

Technique for Renal Arteriography.

Translumbar Method: We have followed the technique of Poutasse for renal arteriography by the translumbar route.¹⁴ We would emphasize the importance of normal hydration and the use of local anesthesia as well as small amounts of non-toxic contrast material. Compression of the lower abdomen and controlled hypotension (intravenous sodium nitroprusside¹¹) facilitate concentration of the contrast material in the renal vessels. An 18-gauge, thin-walled needle is inserted below the left 12th rib lateral to the lumbar vertebra in a cephalad medial direction. After good out-flow of aortic blood is obtained, 10 milliliters of one per cent Procaine solution is injected and a test angiogram is made with 10 milliliters of 25 per cent Hypaque solution. If the location of the needle in the aorta is satisfactory, preferably at or just below the orifices of the renal arteries, as many as three additional hand injections of ten milliliters of 50 per cent Hypaque solution are made. Using a grid cassette, a single roentgenogram is made for each injection of radiopaque material.

Percutaneous Transfemoral Method: The groin is prepared with antiseptic and draped. The skin over the femoral artery is infiltrated with one per cent Novocaine. After puncture of the femoral artery with a Seldinger needle, a flexible piano wire is inserted through the needle and the needle withdrawn. Next, a previously measured polyethylene tube is passed over the wire under fluoroscopic control until its tip is at the level of the second lumbar vertebra. The wire is removed and the plastic tubing is attached to a pressure injector. Thirty milliliters of 50 per cent Hypaque are injected as serial films are made with the use of a Schoenander device making two exposures per second. In some cases a second injection is done to better visualize the take-off of a

renal artery after rotating the patient approximately 15 degrees to the side in question.

Technique for Differential Renal Function Tests: The patient takes a liquid breakfast and is encouraged to drink fluids for two hours prior to the test. Cystoscopy is performed in the operating room with spinal or topical anesthesia. A number 24 F. Brown-Buerger cystoscope is introduced and a No. 8 F. or No. 10 F. Garceau catheter is passed up one ureter approximately seven centimeters. Usually the ureter of the kidney that is suspected of being ischemic is catheterized. The catheter is lubricated with sterile vaseline and indigo carmine solution is injected to detect leakage of urine into the bladder. Urine specimens are collected separately from one kidney through the catheter and from the other kidney through the bladder and cystoscope.¹⁷ The urine specimens may be compared in regard to volume and sodium concentration (Howard test). We have been using the method of Stamey in which an intravenous infusion of urea, saline, pitressin and sodium para-aminohippurate (PAH) is given and three consecu-

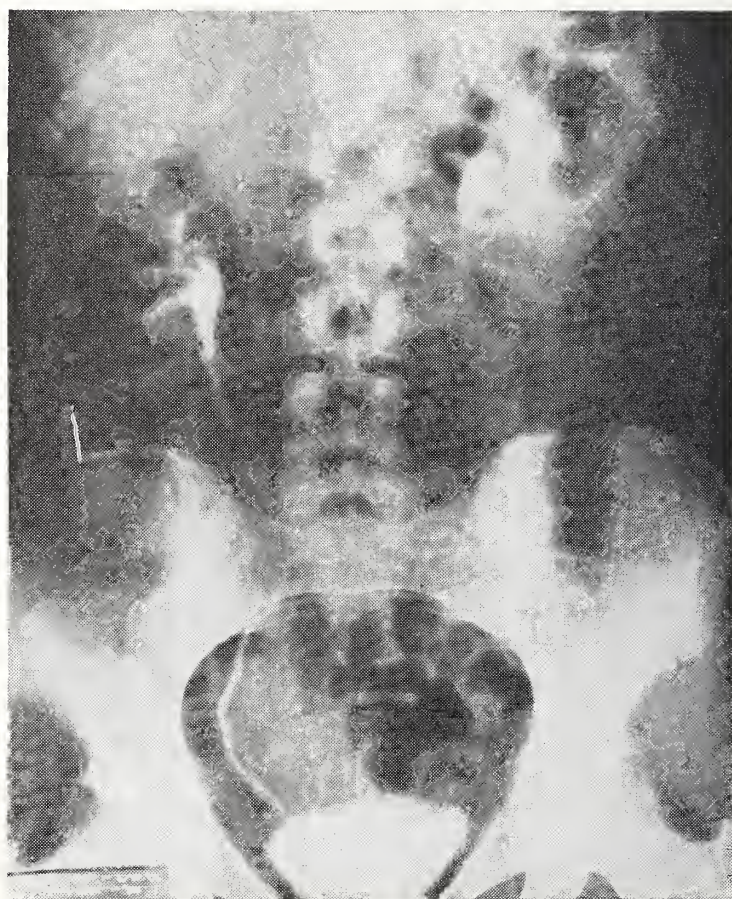


Figure 1, Case 1. At eighteen minutes the intravenous pyelogram shows a greater concentration of radiopaque dye in the right kidney, which is smaller than the left kidney.

tive ten minute specimens are collected for determination of urine volume and PAH concentration.²⁰ One characteristic of the ischemic kidney is increased water re-absorption, which is indicated by a decreased volume of urine and an increased concentration of PAH.

CASE REPORTS

Case Number One: A 31-year-old woman was admitted to Wesley Hospital in August, 1962. Her blood pressure was normal during pregnancy in 1958 and was 130/88 millimeters of mercury on routine examination in 1960. Pain in the right arm prompted examination in July, 1962 at which time her blood pressure was 170/100 millimeters of mercury and a bruit was heard in the right costovertebral angle. Other physical findings including funduscopy were normal.

On the intravenous pyelogram the right kidney was 12 centimeters long, the left kidney was 14 centimeters long. Both kidneys excreted dye promptly, but it was more concentrated on the right side (figure 1). Her blood count, urinalysis, blood urea nitrogen, blood sugar and serum potassium were normal. A roentgenogram of the chest and the electrocardiogram were normal.

A transfemoral aortogram demonstrated focal constrictions of the right main renal artery with a small aneurysm at its bifurcation (figure 2). Differential renal function tests were not considered reliable because the amount of urine excreted during the collection period was too small. The diseased segment of the artery, including the

aneurysm, was excised and repair of the vessel was accomplished by end to end anastomosis. Histologic examination of the excised vessel showed fibromuscular hyperplasia and aneurysm. The patient remained normotensive for the first three postoperative days. Then hypertension recurred and the right kidney was found to be non-functioning on an intravenous pyelogram. When a right nephrectomy was performed in September, 1962, the renal artery was thrombosed but the kidney was receiving some blood from small collateral arteries. Her blood pressure promptly returned to normal after nephrectomy and has remained 110/70 millimeters of mercury.

Case Two: A 50-year-old woman with a history of hypertension for 20 years had recently had acceleration of her hypertension. Anti-hypertensive medication made her feel listless without altering her blood pressure significantly. Her father, who died at the age of 77 from a heart attack, and an aunt both had hypertension. On physical examination she was slightly obese. Her blood pressure was 180/120 millimeters of mercury in the right arm when sitting and 200/130 millimeters of mercury when supine. The fundi showed grade II hypertensive retinopathy (Keith - Wagener - Barker classification). No bruits were heard in the abdomen.

Further studies were done in Wesley Hospital in October, 1962. The intravenous pyelogram was considered normal. A roentgenogram of the chest showed moderate enlargement of the heart and a calcific infiltrate in the right upper lobe consistent with healed tuberculosis. The electrocardiogram was normal. A complete blood count, urinalysis, blood urea nitrogen, fifteen minute phenol-sulfonphthalein (PSP) excretion, urinary catecholamines, serum potassium and protein bound iodine were normal. The Regitine test was negative. A urine culture was sterile.

A transfemoral aortogram demonstrated focal constrictions of the right main renal artery and suggested an occlusive lesion in a branch of this vessel (figure 3). Differential renal function tests were done under local anesthesia with an intravenous infusion of urea, pitressin and PAH. The right kidney excreted less urine with a higher concentration of PAH than the left kidney (table No. 1). The stenotic portion of the right main

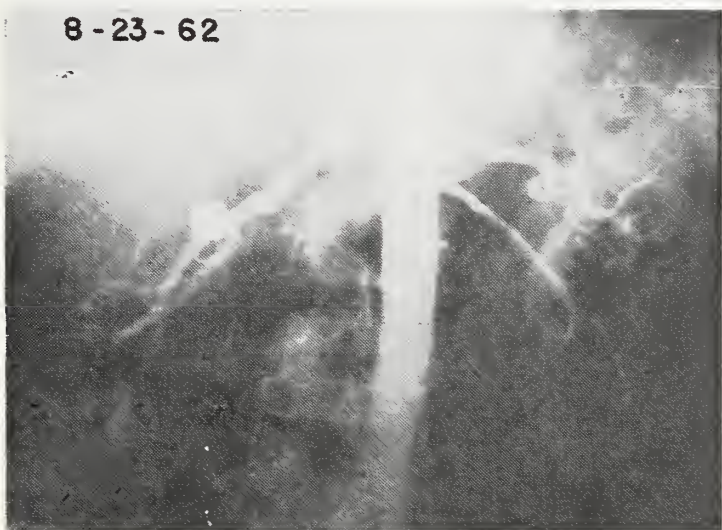


Figure 2, Case 1: Fibromuscular hyperplasia and aneurysm of the right renal artery are demonstrated by the percutaneous transfemoral aortogram. There are two left renal arteries.

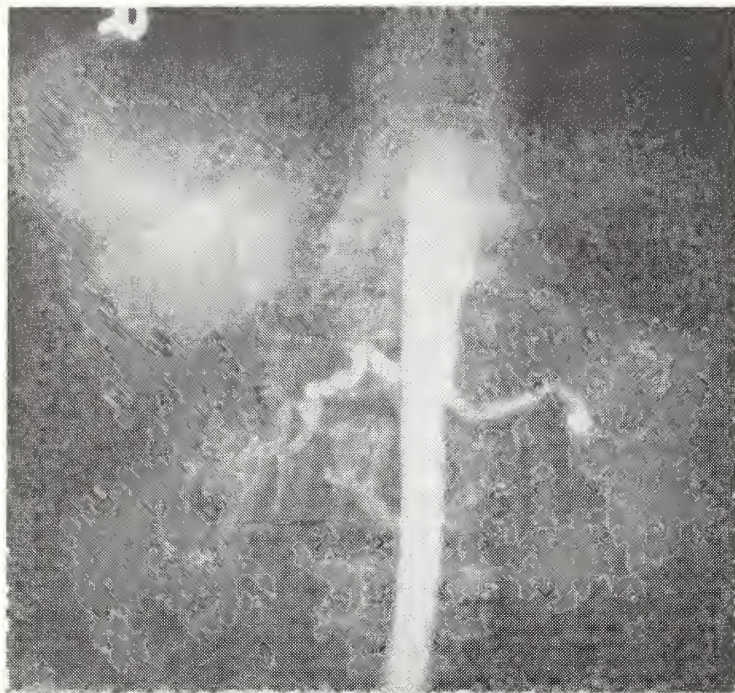


Figure 3, Case 2: Fibromuscular hyperplasia of the right renal artery is shown by the percutaneous trans-femoral aortogram.

renal artery was resected and the vessel was repaired by end to end anastomosis; no branch artery lesion was found. Histologic examination of the resected artery showed fibromuscular hyperplasia. Her blood pressure was unchanged from preoperative levels although her recovery from the operation was uncomplicated and an intravenous pyelogram remained normal.

Because her blood pressure remained elevated, she was readmitted to Wesley Hospital in January, 1963, for follow-up studies. The intravenous pyelogram was normal. A translumbar renal angiogram under local anesthesia showed slight constriction in the right renal artery at the site of the anastomosis but the kidney appeared to have good circulation (figure 4). The blood urea nitrogen was 15 milligrams per 100 milliliters and the catheterized urine was sterile. She was

started on guanethidine sulfate and hydrochlorothiazide and her blood pressure was reduced to a range of 140/86 to 160/90 millimeters of mercury. Since resuming her normal activities her blood pressure has been 160/90 on five milligrams of guanethidine sulfate and 50 milligrams of hydrochlorothiazide daily.

Case Three: A 54-year-old woman had a history of arterial hypertension for one year. An abdominal bruit and disparity in the size and concentration of dye of the two kidneys on the intravenous pyelogram (figure 5) had been observed by the referring physician. She had no history of renal disease or a family history of hypertension. One pregnancy in 1946 was uncomplicated. The positive physical findings were blood pressure ranging from 180/108 millimeters of mercury to 230/120 millimeters of mercury, grade II hypertensive retinopathy and a bruit in the epigastrium and both upper abdominal quadrants, loudest in the left upper quadrant.

When she was admitted to Wesley Hospital in December, 1962, her blood count showed slight anemia. The urinalysis was normal and urine culture was sterile. The fifteen minute PSP excretion was 43 per cent and

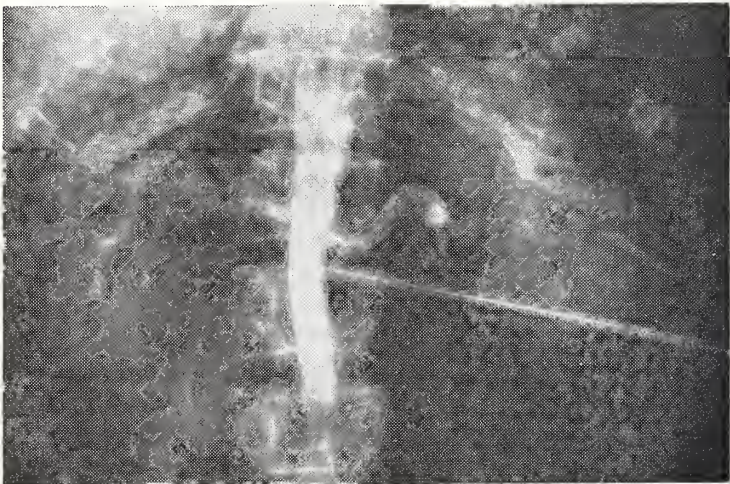


Figure 4, Case 2: This translumbar aortogram was done after repair of the right renal artery by excision of the diseased segment and end to end anastomosis.

TABLE 1. DIFFERENTIAL RENAL FUNCTION TESTS

	Urine flow in Ml/10 min.				Urine PAH concentration in Mg. %			
	RI	LI	R2	L2	RI	LI	R2	L2
Case No. 2	60	75	44	53	93	76	107	83
			R3	L3			R3	L3
	62	73			96	80		
Case No. 3	44	23	43	25	138	286	125	210
			R2	L2			R2	L2
	49	32			83	196		

An intravenous infusion of urea, saline, pitressin and PAH is given. After a suitable waiting period, three consecutive ten minute specimens of urine are collected from each kidney. RI = the first ten minute specimen from the right kidney, LI = the first ten minute specimen from the left kidney, etc. Case No. 2 had fibromuscular hyperplasia of the right renal artery, and Case No. 3 had bilateral occlusive renal artery disease.

urea clearance was 92 per cent. Serum potassium was 4.3 milliequivalents per liter. Her chest roentgenogram was normal. On the plain roentgenogram of the abdomen the right kidney was two centimeters longer than the left kidney. There was a prolonged QT interval on her electrocardiogram.

A translumbar renal angiogram showed bilateral occlusive renal artery lesions consistent with a fibrotic type of disease (figure 6). On differential renal function tests under local anesthesia, the left kidney excreted less urine with a higher PAH concentration than the right kidney (table No. 1). At surgical exploration of the left kidney almost the entire main renal artery was found to be diseased, so the splenic artery was anastomosed to the main renal artery in an end to side fashion distal to the narrowed portion. Postoperatively her blood pressure remained elevated but an intravenous pyelogram showed prompt function of both kidneys and a loud bruit was heard in the left flank. The referring physician has reported that antihypertensive medication has helped to lower her blood pressure, although it is still moderately elevated. Surgical repair of the right renal artery is being considered.

Case Four: A 66-year-old woman whose blood pressure was found elevated for the first time in December, 1962, after she had observed weakness and numbness of her right arm for four days, was admitted to Wesley Hospital in January, 1963. She was an adopted child with no knowledge of her



Figure 5, Case 3: The left kidney is smaller and appears to excrete less radiopaque dye than the right kidney on the intravenous pyelogram.

family. There had been no sign of pre-eclampsia during her pregnancies. She had no urinary complaints and no history of renal disease. Her vision was good. On physical examination her supine blood pressure was 246/120 millimeters of mercury in the right arm. Funduscope examination showed

James R. Geyer, M.D., graduated from Northwestern University Medical School in 1954. In addition to his private practice, which is limited to his specialty, urology, he is Clinical Instructor in Urology at the University of Oklahoma School of Medicine. Doctor Geyer is a member of the South Central Section of the American Urological Association.

Since his graduation from the University of Chicago, The School of Medicine in 1946, Edward R. Munnell, M.D., has been certified by the American Board of General and Thoracic Surgery. In addition to his private practice, Doctor Munnell is Assistant Professor of Surgery at the University of Oklahoma School of Medicine.

Doctor Munnell's professional affiliations include the American Association for Thoracic Surgery, the Southern Thoracic Surgical Association, the American Thoracic Society, the Southwestern Surgical Congress and a Fellow of the American College of Surgeons.

Charles W. Cathey, M.D., graduated from the University of Oklahoma School of Medicine where he is now Instructor in Medicine. In addition to his private practice, he is Chairman of the Intern-Resident Training Program at Wesley Hospital Foundation.

Doctor Cathey is certified by the American Board of Internal Medicine, an Associate of the American College of Physicians, an Associate Fellow of the American College of Cardiology and a member of the Alpha Omega Alpha.

William L. Hughes, M.D., graduated from the University of Oklahoma School of Medicine in 1957 where he is now Clinical Assistant in Medicine. Doctor Hughes, who limits his practice to his specialty, internal medicine, is a member of the American Federation for Clinical Research and the Oklahoma City Clinical Society.

grade II hypertensive retinopathy. Her heart was slightly enlarged to percussion; the lungs were clear to percussion and auscultation. No abdominal bruits were heard. The liver was palpable two finger breadths below the right costal margin. Her physical examination otherwise was negative.

Laboratory studies were as follows: complete blood count and urinalysis were normal; blood urea nitrogen was 22 milligrams per 100 milliliters; serum sodium, potassium, carbon dioxide, and chloride were normal; blood sugar was 70 milligrams per 100 milliliters; VDRL was non-reactive; fifteen minute PSP excretion was 13.5 per cent and urea clearance was 96 per cent. Urinary catecholamines were normal; Regitine test was negative. The electrocardiogram showed left ventricular hypertrophy and primary T-Wave changes. The heart was enlarged roentgenographically. The intravenous pyelogram revealed both kidneys to be small, measuring 11.3 and 11.5 centimeters in length on the right and left sides, respectively, and the lower pole of the right kidney appeared atrophic.

A translumbar renal angiogram was performed with local anesthesia and controlled hypotension. An atherosclerotic plaque was visualized in the proximal portion of the right main renal artery (figure 7). Right renal endarterectomy was done and the patient had a satisfactory recovery. The post-operative intravenous pyelogram showed

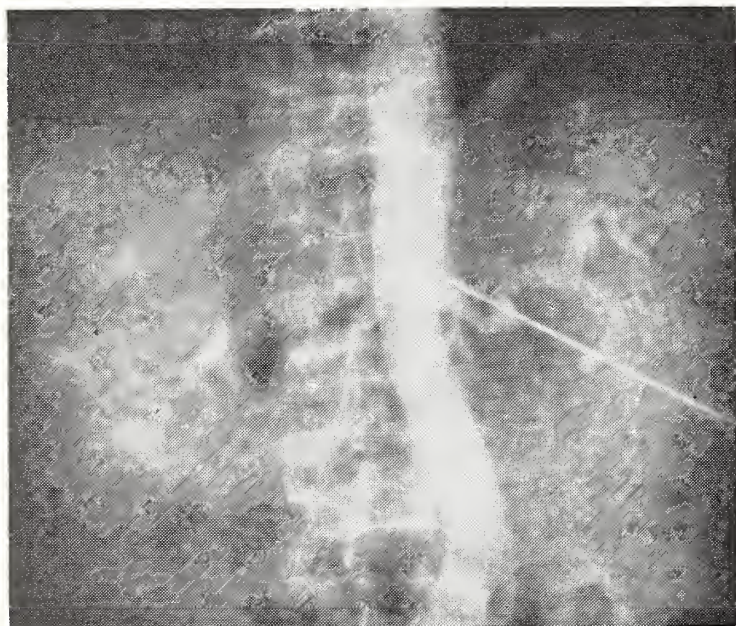


Figure 6, Case 3: Bilateral occlusive renal artery disease is demonstrated by the translumbar aortogram.



Figure 7, Case 4: The translumbar aortogram shows an atherosclerotic plaque occluding the proximal portion of the right main renal artery.

that both kidneys were functioning well. Before discharge from the hospital her blood pressure varied between 220/100-110 supine, and 170/90-100 standing.

Case Five: A 39-year-old woman was known to have hypertension for four years but she had responded fairly well to anti-hypertensive medication. On admission to Wesley Hospital in February, 1963, the blood pressure in both arms was 190/110 millimeters of mercury when she was supine. Her fundi appeared normal. Her heart was not enlarged, but a grade II apical systolic murmur was present. A bruit was heard over the abdominal aorta and also in the right upper quadrant of the abdomen, the right flank and the right lumbar area. A complete blood count, urinalysis and blood urea nitrogen were normal. Her intravenous pyelogram was considered normal; no change was noted in comparison with an intravenous pyelogram done in 1960. A translumbar aortogram demonstrated occlusive disease of the right main renal artery (figure 8).

She was re-admitted to Wesley Hospital in March, 1963. When differential renal function tests were performed, the right kidney was found to excrete about 25 per cent less urine with a higher concentration of PAH than the left kidney. Excision of the stenotic segment and end to end anastomosis of the right renal artery was done and examination showed pronounced subintimal fibroblastic proliferation of the artery. An intravenous pyelogram on the fourth post-

operative day showed prompt function of both kidneys. No anti-hypertensive medication was given. In September, 1963, her blood pressure was 140/88 millimeters of mercury.

DISCUSSION

The list of indications for renal angiography and differential renal function tests covers the important points of the history, physical examination and intravenous pyelogram that suggest occlusive renal artery disease. We have called attention to certain of these findings in the illustrative case reports. The differential diagnosis includes pheochromocytoma, Cushing's syndrome, primary aldosteronism, thyrotoxicosis, coarctation of the aorta, various kidney diseases and essential hypertension.

Certain tests are widely used in evaluating hypertensive patients but caution is necessary in their interpretation. Thiazide diuretics which tend to lower the serum potassium, or a low sodium diet which often results in an increased urinary excretion of aldosterone, may mimic primary aldosteronism; renal artery disease may cause secondary aldosteronism.⁹ Anti-hypertensive agents may cause either false positive or false negative histamine or Regitine tests and other medications, for example tetracycline, erythromycin and alpha methyldopa, may be

responsible for high values of urinary catecholamines.⁵

A thorough survey of the kidneys is recommended for every hypertensive patient. This consists of an intravenous or retrograde pyelogram, urinalysis, Addis test, urine culture with colony count and determination of the fifteen minute PSP excretion or urea clearance. In certain cases renal biopsy is helpful. Other causes for renal hypertension besides renal artery disease may be found, or if the final diagnosis is essential hypertension these baseline studies are useful for future reference.

The intravenous pyelogram is the most helpful screening test for renal artery disease. Classically, a kidney which is shown to be non-functioning by the intravenous pyelogram but which is anatomically normal on the retrograde pyelogram can be considered to have an obstruction of its blood supply. Sometimes partial occlusion of the renal artery causes delay in the appearance of radiographic dye in the kidney. The ischemic kidney may even show "paradoxical hyperconcentration" of radiopaque medium, because of excessive reabsorption of water, urine or higher osmolality and a slower rate of urine flow. In addition, certain anatomic features point to occlusive renal artery disease. A decrease in the length of the kidney of one centimeter or more, or the loss of tissue between the calyces and renal capsule indicate atrophy. With segmental atrophy due to occlusion of a branch of the renal artery or of one of multiple aortic renal arteries, one may see indentation of the normal renal outline on the anteroposterior or oblique roentgenograms, or distortion of a group of calyces within the kidney. About seventy per cent of the patients with occlusive renal artery disease have abnormal intravenous pyelograms, at least in retrospect.¹⁴

Two other screening tests in current use are the radioisotope renogram^{2, 23, 24} and the renal scintigram.^{6, 19, 22} In renal artery stenosis the radioisotope renogram typically shows changes in the concentrating and excretory phases. It is a sensitive test, which varies with certain factors such as the state of hydration of the patient. Because parenchymal renal disease or obstructive uropathy also affect its pattern, this test must be correlated with other studies, particularly the intravenous pyelogram. We do not be-

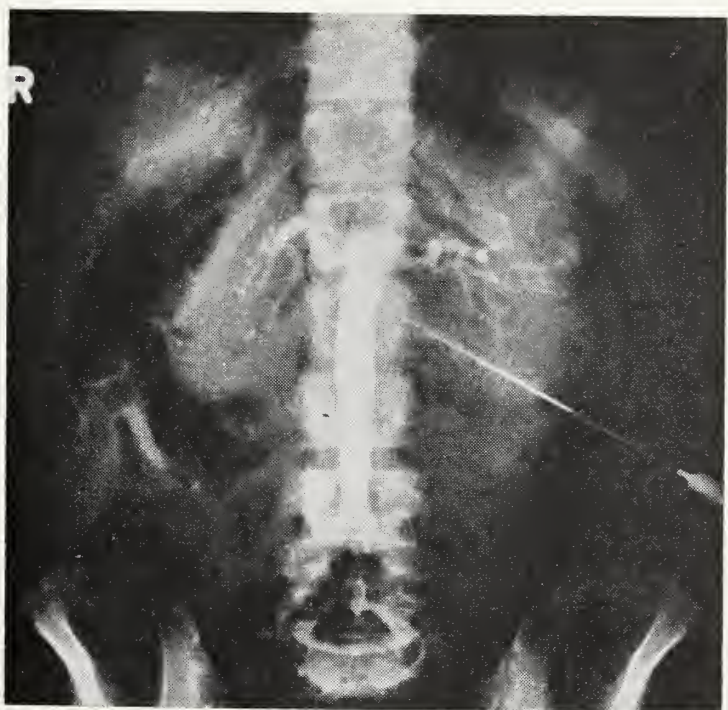


Figure 8, Case 5: There is a fibrosing, occlusive lesion of the right main renal artery.

lieve that a radioisotope renogram which is interpreted as normal can be substituted for adequate angiography and differential renal function tests. As yet the renal scintigram has had only limited clinical use and its value cannot be accurately assessed.

Short of surgical exposure, the only means of visualizing occlusive disease of the renal arteries is aortography. Many physicians have been reluctant to recommend it because complications such as paraplegia have been widely publicized. With careful technique it has been shown to be a safe procedure in large series of patients.^{1, 14} We believe aortography is necessary for detecting bilateral renal artery lesions and lesions in the branches of the renal artery, contrary to Stamey's view that good differential renal function studies usually suffice.²¹ Often branch lesions are more apparent on the angiogram than at operation where extensive, careful dissection is necessary. Another important finding is the presence of multiple renal arteries.⁴ In this case, if the diseased vessel is large, it should be repaired; however, if it is small and supplies only a small portion of the kidney, segmental resection of the kidney is the preferred treatment.¹⁵ Thus, aortography allows the surgeon to anticipate problems and to plan the best method of repair.

We use differential renal function tests when the aortogram is equivocal, or when it is advisable to assess the function of each kidney after occlusive renal artery disease has been demonstrated. Especially valuable information is obtained when the disease is bilateral or when nephrectomy is contemplated. Women generally need only topical anesthesia, but spinal anesthesia is more satisfactory for men. The urologist must try to avoid leakage of urine around the catheter and obstruction of urine flow by blood clots or ureteral spasm. Ureteral edema and temporary obstruction, pyelonephritis, prostatitis, and urethritis are hazards. Marshall and Hinman have reported intracranial bleeding following the use of an osmotic diuretic for differential renal function tests.¹⁰ To reduce this danger they advocate prompt restoration of normal tonicity and maintenance of the horizontal position for twelve hours.

The surgical management of occlusive renal artery disease is directed toward correcting the arterial hypertension and restoring renal blood flow and function. The importance of the latter is obvious in patients with bilateral occlusive disease, as in Case Number Three. Moreover, one-third of the patients with atherosclerotic lesions, which are the most common, have bilateral involvement.

When there is stenosis of the main renal artery, the preferred surgical treatment may be excision of the involved portion of artery with repair by end to end anastomosis, endarterectomy (for atheromatous plaques), patch graft, by-pass graft or splenorenal arterial shunt. In general, lesions in branches of the renal artery are not amenable to repair and segmental nephrectomy is necessary.¹⁵ This procedure is also applicable in cases of multiple renal arteries, when one of the smaller segmental vessels is stenosed or occluded. Repair of these small vessels is frequently complicated by thrombosis or recurrent stenosis.

When renal ischemia results in so much atrophy of the kidney that significant return of function cannot occur, or when the main renal artery is thrombosed and small collateral arteries still give some nourishment to the ischemic parenchyma, allowing it to produce renin, nephrectomy is done in an effort to correct the arterial hypertension.

SUMMARY

1. The most common cause of potentially curable arterial hypertension is occlusive renal artery disease.

2. The history, physical examination and intravenous pyelogram often suggest occlusive renal artery disease and the diagnosis is confirmed by renal angiography and differential renal function tests.

3. Five case reports illustrate the application of diagnostic procedures and the surgical treatment.

4. The aims of treatment are restoration of normal renal blood flow and correction of arterial hypertension. □

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FOOTNOTE

The authors are indebted to Delbert J. Lacefield, Ph.D., Department of Biochemistry, for his assistance in performing the differential renal function studies.

301 N.W. 12th Street, Oklahoma City, Oklahoma

SCHEDULE OF
OU MEDICAL CENTER POSTGRADUATE COURSES

January 8	WEDNESDAY POST GRADUATE SHORT COURSE SERIES FOR PRACTICING PHYSICIANS				
February 12					
March 11					
	*	*	*	*	*
January 16	OPEN CHANNEL TELEVISION PROGRAMS — Thursday Evenings 9:45 p.m.				
through March 26					
	Channel 11, KOED-TV, Tulsa			Channel 13, KETA-TV, Norman	
March 2-7	BASIC ELECTROCARDIOGRAPHY				
March 5-6	OPHTHALMOLOGY — OTOLARYNGOLOGY SYMPOSIUM — Oklahoma City Academy of Ophthalmology and Otolaryngology				
March 12-13	SYMPOSIA in GYNECOLOGY and OBSTETRICS				
March 14	OBSTETRICAL-GYNECOLOGICAL SYMPOSIUM — Oklahoma City Obstetrical and Gynecological Society				
April 22-23	CLINICAL IMMUNOLOGY				
April 17-18	ORTHOPEDIC SYMPOSIUM				
May 15-16	OKLAHOMA ASSOCIATION of HOUSE STAFF PHYSISIANS				
May 22	CARDIAC METABOLISM — Oklahoma City Internists Association				

A detailed program will be mailed to physicians several weeks prior to each course. Advance registration on the form attached to each program will assure you a place in the course and should be mailed to the Office of Postgraduate Education, University of Oklahoma Medical Center, Oklahoma City, Oklahoma 73104.

The T-3 Test

DEWITT T. HUNTER, JR., M.D.
GALEN P. ROBBINS, M.D.

T-3 promises to become one of the most important diagnostic tests in the presence of suspected thyroid dysfunction. It is the best method for evaluation in the patient who has received iodides and in whom neither the PBI nor the radioiodine uptake can be done.

THE *in vitro* I-131, labeled L-Triiodothyronine (T-3) uptake test is the newest, and possibly the best thyrometric procedure to be developed in recent years.¹ Performed

on two ml. of patient serum, the T-3 determination affords accuracy and advantages hitherto unavailable in thyroid function evaluation.² Figure 1 presents the major metabolic reactions in thyroid function and indicated are the several points of analytic attack including that of the T-3.

METHOD

The T-3 technique is relatively simple to perform. Patient serum is incubated with I-131 labeled Triiodothyronine until equilibrium is reached between the serum and the substrate. The degree of transport globulin saturation then can be determined accurately using standard radiometric equipment. Since transport globulin binds Thyroxine approximately 20 times more firmly

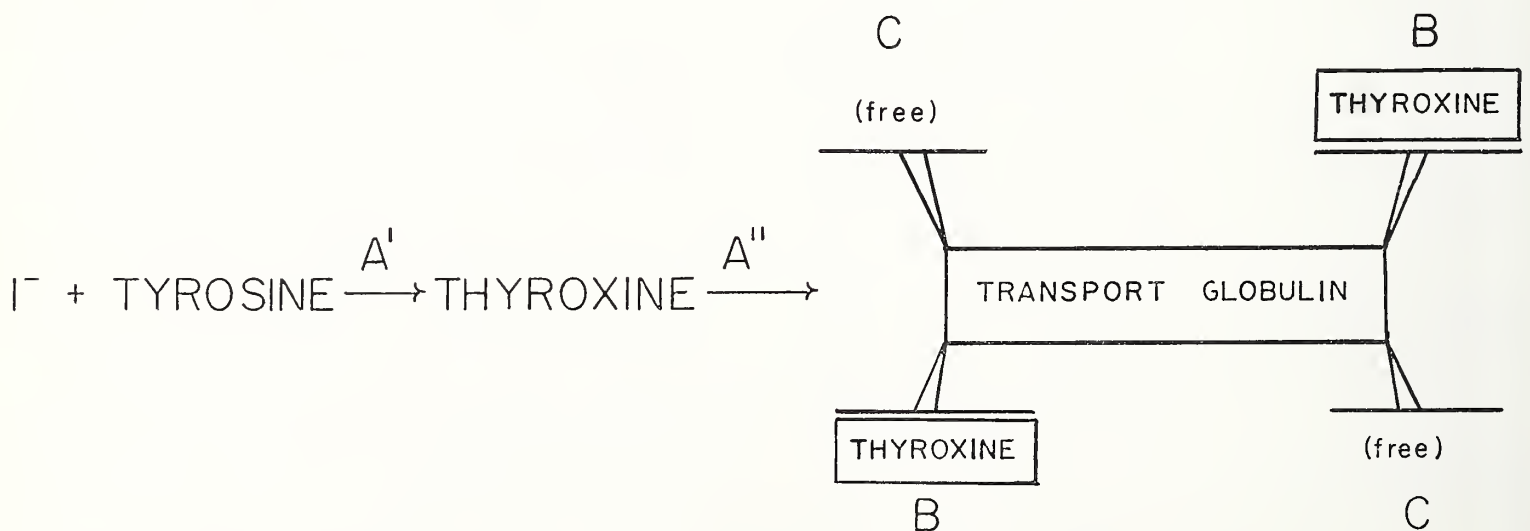


Figure 1. The I-131 uptake estimates the magnitude of vector A', while the I-131 conversion ratio in addition supplies information on vector A''. The protein bound iodine analysis determines the amount of iodine (B) linked to precipitable serum proteins. The T-3 uptake assays the degree of unsaturation (C) of alpha intermediate transport protein.³ Table 1 roughly compares values of the three common laboratory tests in thyroid diagnosis.

	Hypo-Range			Euthyroid			Hyper-Range			
T-3 ⁴ "Index"	1.50	1.35	1.20	1.16	1.00	0.90	0.82	0.78	0.74	0.70
T-3% ^{5*} "Triosorb"	25			30	35	40	50			
PBI Mg%	1.0	2.0	3.0	4.0	6.0	8.0	10.0	15.0	20.0	25.0
I-131% Uptake	5			15	30	45	50	55	60	65

*Correlative values not fully established at present.

TABLE 1
APPROXIMATE COMPARATIVE VALUES FOR THREE THYROID FUNCTION TESTS

than T-3 is bound, labeled T-3 is used rather than labeled Thyroxine so as to avoid interchange with existing bound Thyroxine. Figure 2 shows the reaction involved in the process.

In most conditions in which alpha globulin is decreased, transport globulin is deficient. In those instances, T-3 serum uptake is decreased and the result indirectly indicates excess circulating Thyroxine and hyperthyroidism. The converse is true in those con-

ditions in which alpha intermediate is elevated. This situation is analogous to serum iron levels and serum iron binding capacities. In general, the disease process altering alpha globulin must be far advanced and quite obvious clinically before significant T-3 alteration is encountered. Knowledge of the degree of compartment saturation by a hormone may indeed contribute vital information in diagnosis and treatment of endocrine disease in these instances of altered com-

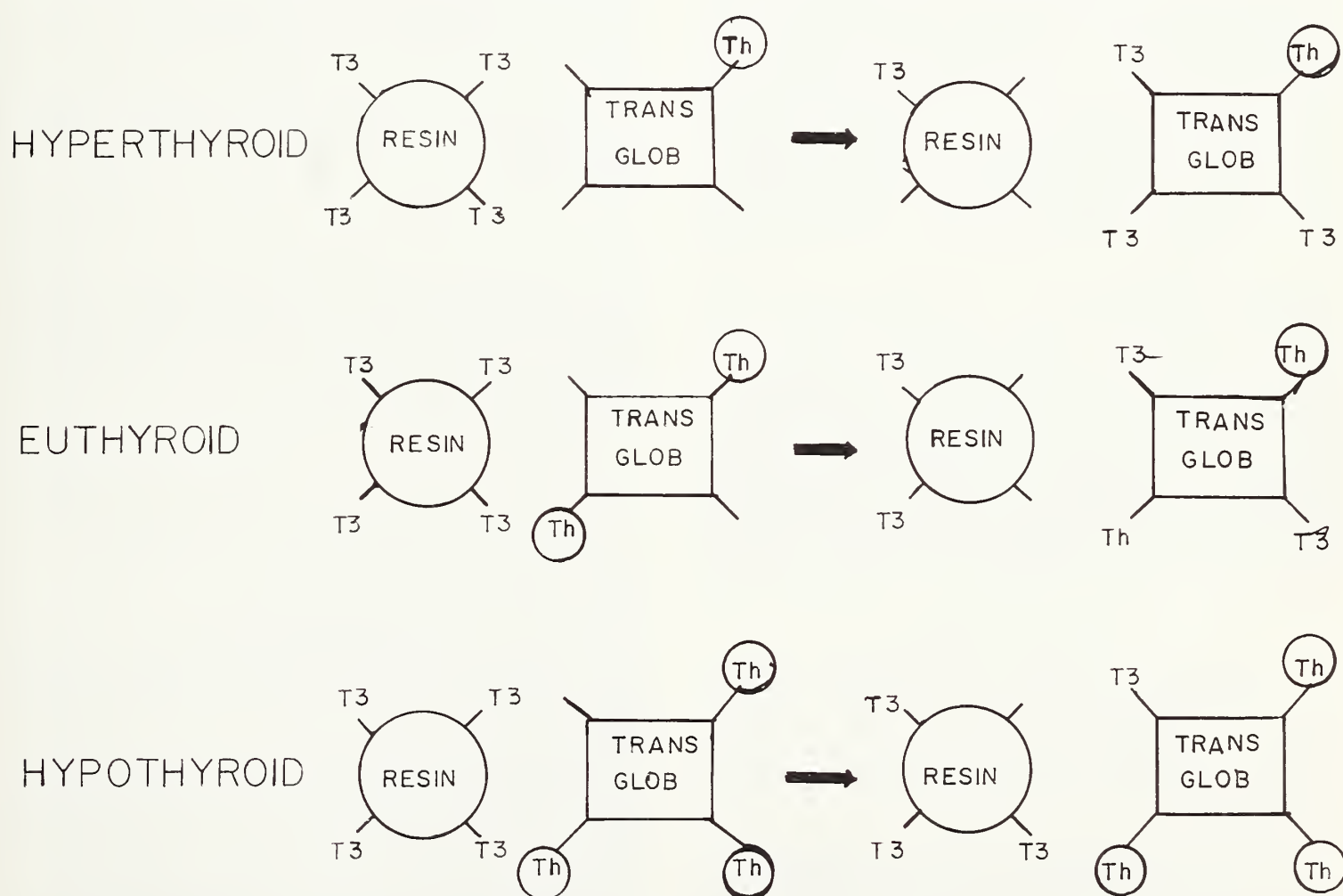


Figure 2. Save for a few exceptional disease processes which quantitatively alter alpha globulins,* the T-3 procedure quantitates thyroid function with comparable or superior accuracy and specificity to other laboratory tests. Those diseases or conditions altering T-3 serum uptake are listed in table 2.

RESULTS		
SUPERSATURATED RANGE	NORMAL RANGE	UNSATURATED STATE
0.70 - 0.85	0.86 - 1.20	1.21 - 1.50
THYROTOXICOSIS	EUTHYROID STATE	MYXEDEMA
Chronic thyroiditis (early)	Iodine contamination	CRETINISM
Familial (rare)*	Non-toxic goiter	POST THYROIDECTOMY
Dicumarol and Heparin Rx.	Anxiety	CHRONIC THYROIDITIS (late)
Nephrosis (late)*	Mercurial Rx.	PITUITARY INSUFFICIENCY
Malignancy (late)*	Congestive heart failure	Familial (rare)*
Cirrhosis (late)*	Thyroid neoplasia (non-functional)	Estrogenism*
Thyroid neoplasia (functional)	Propylthiouracil	Pregnancy*
Neonatal*		

TABLE 2

partment size. For example, the stimulatory mechanism to hormone production may be the degree of unsaturation rather than the actual hormone level.

Our laboratories have performed several thousand T-3 analyses by the red cell tag, the amberlite exchange and the Triosorb® procedures. The superiority of the techniques appears to be in reverse order. The earlier T-3 procedures involved removal of excess T-3 by red cell absorption. These sources of errors are now eliminated by the resin and the Triosorb® modifications. The resin technique may be supplanted by the Triosorb® procedure which involves fewer steps and hence even greater precision and reproducibility. Accuracy by all techniques exceeds 90 per cent. In several instances where T-3 results differed from clinical impression and other laboratory results, long term follow-ups substantiated the accuracy of the T-3.

Most new procedures gain acceptance and approval slowly. The progress of the T-3 analysis has been rapid and widespread. Over 50 papers based on many thousand determinations have been published citing its merits. Technical accuracy is reported at 0.09 (SD)² and clinical correlation exceeds 94 per cent. The merits of the test are:

(a). Endogenous and exogenous iodine contamination represent no problem. Gross patient or atmospheric free iodine will not influence test results.

(b). The patient is *not* exposed to ionizing radiation. Specimen can be transported or shipped to the laboratory.

(c). The analysis is rapid and can be completed within two hours after collection of the specimen.

(d). Cost of material and time is low.

(e). Accuracy, reproducibility and specificity (except for alpha globulin aberration) exceed other tests now in use.

(f). Accuracy is not affected by a fasting state, hemolysis, jaundice and many of the extrinsic factors that jeopardize the accuracy of most chemical and biologic determinations.

SUMMARY

A relatively new thyroid function test is discussed and compared with existing procedures. Present evidence indicates that the T-3 assay is the test of choice.

ACKNOWLEDGMENT

The technical work was performed by Mr. John Bort, M.T. (ASCP). □

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DeWitt T. Hunter, Jr., M.D.

University of Texas Medical Branch, Galveston, Texas

DeWitt T. Hunter, Jr., M.D., is Professor of Pathology at the University of Texas Medical Branch, Galveston, Texas. He is certified by the American Board of Pathology.

Galen P. Robbins, M.D., is Clinical Instructor in Medicine at the University of Oklahoma School of Medicine. He is certified by the American Board of Internal Medicine.

Spherocytosis

ROGER REID, M.D.

Does spherocytosis affect all members of a family? Is there a relationship between the age of onset and severity? What is the apparent treatment of choice?

THE FIRST significant contribution to the literature on spherocytosis was made in 1871 by Vanlair and Masius with a paper, *La Michrocythémie*, however recognition of the disease was credited mainly to Murchison (1885), Wilson (1890) and Wilson and Stanley (1893). Plate (1913) was the first to suggest its inheritance as a Mendelian dominant; Race (1942) examined 183 members of 26 families in which the disease occurred and confirmed the Mendelian dominant pattern.¹

Familial, hemolytic anemia or spherocytosis has the following characteristics: The red blood cells are predominately microcytic with globular outlines (spherocytes). They are excessively fragile because of an inborn metabolic error which results in increased destruction of red blood cells in the spleen. This usually is associated with an increased production of red blood cells by the bone marrow. The fragile spherocytes tend to sudden hemolysis leading to crises associated with jaundice, anemia and splenomegaly. The disease is much more serious

in infants than in adults.^{2, 3} The condition is considered the result of a dominant hereditary defect in the hematopoietic system which produces fragile globular microcytes.

This paper reports spherocytosis in three generations of one family, six of whom underwent splenectomies. Table 1 shows the genetic relationships. The blood of all siblings was examined and attention is directed to the fact that not all siblings were affected. The condition was manifest first in the children and last in the grandmother, hence the operative procedures were performed in an order reverse to their ages.

REPORT OF CASES

Case 1. J. W. H., at age of 10 months was treated for anemia but had never been jaundiced. At the age of four he was admitted to the University Hospitals in Oklahoma City because of anemia. His paternal grandfather died from leukemia at the age

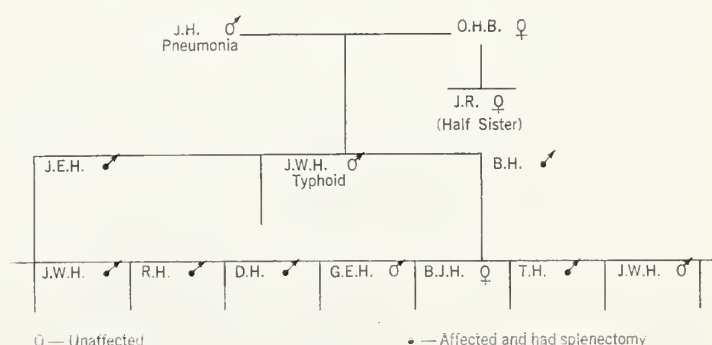


Table 1

of 53 while his father (JEH) and a paternal uncle (BH) had a history of jaundice.

Physical examination revealed an enlarged liver and spleen. Erythrocytes showed 30 per cent spherocytes; hemolysis began in 0.78 per cent saline and was complete in 0.34 per cent saline.

A diagnosis of congenital hemolytic anemia was made. Transfusions were given and a splenectomy was done 7-10-52. The spleen weighed 215 grams. His subsequent course has been good; no further crises have developed and he is attending school. On 8-16-62 a follow-up blood count showed a hematocrit of 39 per cent and a hemoglobin of 83 per cent.

Case 2. J. E. H., age 37 years. While in the Armed Forces this man was hospitalized for three months because of jaundice but he was advised that he had hepatitis, a condition epidemic at that time. On 7-11-51 he was seen in the Outpatient Department of the University Hospitals where blood studies showed 30 per cent spherocytes with 49 per cent hemolysis in 0.45 per cent saline and 89 per cent hemolysis in 35 per cent saline. Surgical consultation was requested but he failed to keep his appointment.

In 1952 he received several blood transfusions elsewhere but details of his laboratory data and physical findings are not available.

On 5-17-59 he was admitted to the Memorial Hospital of Southern Oklahoma in Ardmore with the diagnosis of congenital hemolytic anemia. Coombs' test was negative. Erythrocytic hemolysis started initially in 0.46 per cent saline and was complete in 0.35 per cent saline.

Splenectomy was done 6-20-59. The spleen weighed 1,256 grams. He had a stormy post-operative course but his subsequent health has been good and he has returned to his work with the local fire department. On 8-16-62 a follow-up blood count showed a hematocrit of 49 per cent with a hemoglobin of 100 per cent.

Case 3. T. A. H., age seven weeks, was admitted to the Ardmore Sanitarium and Hospital in Ardmore 6-2-55 with a diagnosis of congenital hemolytic anemia.

At birth, 5-2-55, he weighed six lbs. 10½ ozs. and was in apparent good health when released with his mother on the third postpartum day. He was not re-examined until 6-16-55. At that time he weighed seven lbs. 14½ oz. and was deeply jaundiced. He had developed abdominal distress due to an enlarging spleen as well as ascites so hospitalization was advised.

Pre-operatively a white blood cell count of 40,000 persisted. He received blood transfusions and required paracentesis for the ascites. On 6-22-55 he weighed eight pounds five ozs. On 6-26-55 the erythrocytes showed marked fragility; hemolysis began in 0.65 per cent saline and was complete in 0.50 per cent. On 6-28-55 hemolysis began at 0.65 per cent saline and was complete at 0.35 per cent saline.

Splenectomy was performed 6-25-55. The spleen weighed 45 grams. He was released from the hospital 7-26-55.

This patient has not developed normally either physically or mentally and has an increased susceptibility to infections. In addition to several colds, reported by the mother, he was seen for impetigo in 1959; measles and tonsillitis in May 1960; cervical adenitis in November 1960 and two bouts of otitis media in 1961. He has had no episodes suggestive of hemolytic crises. At present he is in good health and is in the second grade at school. A blood count in April 1962 showed a hematocrit of 35 per cent with a hemoglobin of 11.95 grams.

Case 4. R. H., age 17 years, was admitted to Memorial Hospital on 2-9-61 and released on 2-14-61; he was readmitted 2-18-61 and released 3-4-61. The diagnosis of congenital hemolytic anemia was established on the first admission. At this time his history was simply that of having had a "cold" which had persisted all winter. During the fortnight prior to the first admission he became increasingly weak which

Roger Reid, M.D., an Ardmore physician, graduated from the Faculty of Medicine, University of Manitoba in 1931. Doctor Reid is a Past-President of the Oklahoma Chapter of the American Academy of General Practice and a member of the Association of Military Surgeons.

necessitated his being brought home from school. Otherwise there were no previous serious illnesses.

He complained of marked weakness and on physical examination was found to have pallor and tachycardia; his spleen was easily palpable two inches below the left rib margin; his red blood cell count was only 1,000,000. On 2-9-61 the hematocrit was 12 per cent with a hemoglobin 4.6 grams; on 2-14-61 the hematocrit was 44 per cent and hemoglobin 14.2 grams; erythrocyte hemolysis started at 48 per cent and was complete in 0.34 per cent saline. Eight pints of blood were given and he was released 3-3-61. The hematocrit was 38 per cent and the hemoglobin 12.6 grams.

On 2-21-61 splenectomy was done. The spleen weighed 543 grams. He received one pint of blood during surgery.

This boy, a highschool student, has done extremely well and his strength has increased rapidly. His blood count in April 1962 showed a hematocrit of 49 per cent and a hemoglobin of 13.0 grams.

Case 5. B. H., age 43 years, was admitted to the Memorial Hospital on 2-11-61 with the diagnosis of congenital hemolytic anemia. He was released 3-4-61.

This man had known he was afflicted with splenic anemia. In 1942 while in the armed services, he was hospitalized for jaundice. The diagnosis was established, the condition explained to him and splenectomy was recommended, but he declined surgery. In 1955 when his baby son (TAH) was under treatment, he did not favor surgery. Prior to admission his health had not been good and during the previous months he had taken various "tonics" and vitamins.

Immediately prior to hospitalization he became very weak and, as was expected, the blood examination showed a marked anemia, the hematocrit being 19 per cent with a hemoglobin of 6.4 grams.

He required transfusions of 12 pints of blood. Eight pints were given preoperatively which brought the hematocrit to 37 per cent, and the hemoglobin to 12.2 grams. Red cell fragility tests were not done; on 2-20-61 platelet count was 132,000.

On 2-22-61 splenectomy was done. The spleen weighed 1560 grams. He recuperat-

ed quite satisfactorily and soon returned to his duties with the city police department. A blood count in April 1962 showed a hematocrit of 52 per cent and a hemoglobin of 16.85 grams.

Case 6. O. H. B., age 70 years, was admitted to Memorial Hospital 3-24-61 with the diagnosis of congenital hemolytic anemia and released 4-17-61. This lady, the mother of J.E.H. and B.H., over a two year period had been hospitalized on various occasions for removal of a urethral caruncle, cholecystectomy, cystoscopy and hypertensive cardiovascular disease, etc.; at these times the diagnosis of familial hemolytic anemia was established and reaffirmed.

A red cell fragility test on 5-18-59 showed that hemolysis started at 0.52 per cent and was completed in 0.38 per cent saline; the Coombs' test was negative; the hematocrit was 27 per cent and the hemoglobin 9.6 grams. Five months later repeated readings were almost identical.

On 3-7-61 hemolysis started at 52 per cent and was complete in 0.42 per cent saline. The hematocrit was 29 per cent, the hemoglobin 10.0 grams and the reticulocytes were 1.6 per cent. Also on 3-9-61 a gastric analysis showed achlorhydria. On 3-13-61 bone marrow studies were reported normal, the hematocrit was 34 per cent and the hemoglobin 11.4 grams. On 3-24-61 the hematocrit was 33 per cent and the hemoglobin 10.8 grams. Splenectomy was performed. The spleen weighed 332 grams.

This lady had infirmities due to advanced age but no episodes suggestive of hemolytic crises occurred. A blood examination in February 1962 showed the hematocrit to be 46.5 per cent and the hemoglobin 17.0 grams. The patient expired May 30, 1962. Death was attributed to generalized arteriosclerosis.

DISCUSSION

While the familial incidence of spherocytosis is well established, the medical literature contains few reports wherein five or more members of one family have undergone splenectomy.

In 1933 Wise reported six cases in two generations of one family all of whom had splenectomies.¹ In 1960 he reported that

among 43 individuals representing six generations of the same family, there were 11 cases all of whom underwent splenectomies.⁵ In addition there were six members who were jaundiced some time in life, but a diagnosis of spherocytosis was not established and no surgery performed.

Recently Miller has reported five generations in a family with hereditary spherocytosis. There were 28 affected individuals of whom 15 had splenectomies and four had exchange transfusions.⁶

This paper reports six cases of spherocytosis all of whom required splenectomies, none had recurrences of hemolytic crises and all were in good health one to eight years later.

It is interesting to note: 1) Five of the six patients were male, one was female. 2) Several siblings did not have latent or manifest spherocytosis. 3) The younger individuals manifested more severe forms of the disease. 4) The hemolytic crises may become life endangering. 5) All patients underwent splenectomies and made excellent recoveries.

SUMMARY

Six cases of spherocytosis occurring in three generations of one family are re-

ported. All made excellent recoveries following splenectomy which appears to be specific treatment. Five of the patients were male, one female. The most severe crises occurred in the younger individuals, who were "more sick than jaundiced," while the adults were "more jaundiced than sick."²

ADDENDUM

After this paper was prepared another son (J.W.H.) was born 5-8-62 to the B.H. family and developed severe jaundice within twenty-four hours after birth. This appeared to be congenital spherocytosis with hyperbilirubinemia. He was transferred to the Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City where he received an exchange transfusion with a very satisfactory outcome. This patient is still being followed. □

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1001 15th Street, N.W., Ardmore, Oklahoma

CALL FOR RESOLUTIONS

The Speaker of the House of Delegates of the Oklahoma State Medical Association has issued a call for all resolutions to be considered by the policy-making body at its annual session, scheduled for May 1-2, 1964, in Oklahoma City.

Resolutions from county medical societies, or from individual OSMA members, must be received by the Executive Office of the association by April 1st in order to be included on the agenda. However, it is hoped that most resolutions will be submitted at least sixty days in advance of the meeting.

All resolutions, regardless of origin, must be transmitted and signed by the Secretary of the component medical society. □

Acute Pancreatitis Presenting As Coma*

THOMAS R. TREECE, M.D.
ALAN R. BURES, M.D.
MERVIN L. CLARK, M.D.

Another entity has been added to the expanding list of clinical considerations in the differential diagnosis of coma.

THE SYNDROME of painless shock or coma in association with acute pancreatitis has been described recently by Toffler and Spiro.¹ Their report is based on cases found at autopsy that were unsuspected clinically. Recently the diagnosis of painless, acute pancreatitis was made in a patient in whom coma and cyanosis were the only manifestations. After admission to the medical service of Central State Griffin Memorial Hospital supportive therapy consisting of oxygen and intravenous fluids was followed by recovery.

CASE REPORT

A 62-year-old white man was a victim of the 1918 influenza epidemic. Several years thereafter he developed manifestations of Parkinsonism and mental deficiency secondary to encephalitis. In 1949 he was admit-

ted to Central State Griffin Memorial Hospital, a state mental institution. In 1961 surgical pallidectomy was suggested for the Parkinson's disease but he refused. He was seen again in early 1962 because of nasal polyps with nasal obstruction and again refused surgery. Other than a multivitamin capsule and 2.5 mg Artane two times daily he received no other medications. He had received no tranquilizers, sedatives or narcotics. Alcoholism was not elicited as a part of his past history.

On December 26, 1962, he suddenly became comatose and deeply cyanotic. After nasal oxygen was started he was admitted to the medical service.

Physical examination revealed: blood pressure 125/75; pulse 100 per min.; respiratory rate 28 per min.; rectal temperature 99.6° F; body weight 222 lbs. General appearance was that of an obese, semicomatose, deeply cyanotic white man whose coma had lifted to the point where he responded to deep pain and occasionally could answer simple questions. Examination of the head revealed no evidence of trauma. Pupils were round, regular and responded to light. Funduscopic examination revealed no significant abnormality. The left carotid artery pulsation was absent. The chest was barrel-shaped with poor respiratory excursion. The lungs were clear and examination of the heart revealed no abnormalities. The abdomen was obese without masses, organ enlargement, or tenderness. Bowel sounds were present and not

*From the Department of Medicine, University of Oklahoma Medical Center, Oklahoma City, and Central State Griffin Memorial Hospital, Norman, Oklahoma.

increased. The extremities revealed only cyanosis. Neurological examination revealed a mask-like Parkinsonian facies, generalized cogwheel muscular rigidity and a Parkinsonian tremor which was more marked on the left than the right.

The initial impression was coma due to cerebral or myocardial infarction, superimposed upon post-encephalitic Parkinsonism. Diabetic coma and acute pancreatitis were also considered. Lumbar puncture revealed clear fluid, with no cells and normal cerebrospinal fluid sugar and proteins. Slightly increased spinal fluid pressure readings were invalidated by poor cooperation from the patient. An electrocardiogram showed sinus tachycardia with no evidence of myocardial infarction. Hemoglobin was 13.4 gm with a 45 per cent hematocrit. White blood cell count was 15,500/mm³ with 92 per cent segmented, two per cent nonsegmented granulocytes and six per cent lymphocytes. The blood urea nitrogen was 13 mg per 100 ml. Serum electrolytes were: sodium 154 meq per liter, potassium 5.0 meq per liter, chloride 100 meq per liter and CO₂ 26.47 meq per liter. Blood glucose was 80 mg per 100 ml; SGOT was 160 U., prothrombin time 14 seconds with a control of 13 seconds, total serum protein 6.8 gm per 100 ml with albumin 4.4 gm per 100 ml and globulin 2.4 gm per 100 ml. Serum amylase² was 103 mg per 100 ml (normal 20-40 mg per 100 ml).^{*} Serum calcium was not done.

Within eight hours after admission, after supportive therapy with intravenous fluids and oxygen, the patient was alert and still without pain. A portable chest film was of poor quality, but suggested fluid or infiltrate in the left lung base.

The day following admission, the SGOT was 200 units and the serum amylase 88 mg per 100 ml.

The patient still had no gastrointestinal complaints and no abnormalities were found on abdominal examination. Parotid gland tenderness and enlargement were absent. X-ray examination of the abdomen showed no calcification in the region of the pancreas. A second upright chest film revealed blunt-

ing of the left costophrenic angle suggesting a small amount of fluid in the left hemithorax.

Despite his insistence that he felt well, the patient was kept at rest the next four days. By the third hospital day the serum amylase had dropped to normal. The SGOT, which was still 200 U. on the third day, returned to a normal level by the sixth day.

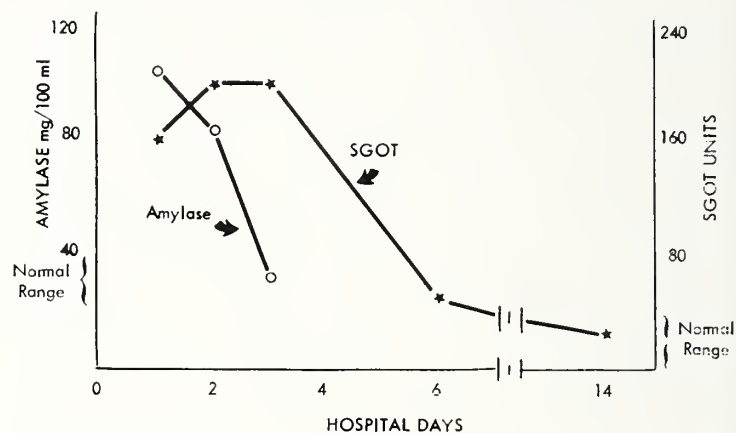


Figure 1. Graphic record of serum amylase and serum glutamic-oxalacetic transaminase levels during hospitalization.

Serial electrocardiograms revealed no evidence of myocardial infarction. Review of the old chart revealed that the absence of the left carotid pulsation had been noted some years previously although no explanation for it was apparent. The patient recovered completely and continued to be asymptomatic except for Parkinsonism. Three weeks after the episode a glucose tolerance test was normal, the white blood cell count had dropped to 7,000/mm³ with a normal differential, and a BSP test revealed 13 per cent retention in 45 minutes.

Over the three week period the fluid in the left pleural cavity slowly disappeared. The patient refused needle biopsy of the liver and thoracentesis for diagnostic purposes. An oral cholecystogram revealed four radio-lucent calculi but the patient refused to consider cholecystectomy.

DISCUSSION

Toffler and Spiro¹ culled 45 fatal cases of acute pancreatitis from 16,384 autopsies performed at the Grace New Haven Community Hospital and the West Haven Veterans Administration Hospital between 1928 and 1960. In nine of these 45 cases there was no

^{*}An approximate conversion to Somogyi units is obtained by multiplying by four.

clinical indication of the diagnosis. Acute pancreatitis was discovered only at autopsy. Eight of the patients were stuporous or comatose at the time of admission, five were in shock and all had no pain. The initial impressions were generally myocardial infarction, cerebrovascular accident or diabetic coma. The authors point out the paucity of historical factors, symptoms and physical findings which might have suggested the correct diagnosis in the nine cases, and call attention to the fact that coma alone may be the predominant presenting feature of acute pancreatitis.

Donhauser and Bieglow³ reviewed 21 cases of acute pancreatitis verified at autopsy which began with an atypical sign-symptom complex. Of the 21 cases, four were without pain, while cyanosis and dyspnea were present in 12.

The importance of pleural effusion as a diagnostic sign in acute pancreatitis has been pointed out by Lipp and Aaron⁴ who reported a 40 per cent incidence of pleural effusion in their cases. It is not widely appreciated that the pleural exudate often contains

amylase in concentrations far above that which may be present in blood and it is unfortunate that a diagnostic thoracentesis could not be carried out in our patient. Two examples of elevated amylase in pleural effusion have been reported by Goldman, *et al.*⁵ Hammarsten, Honska, and Limes⁶ collected seven cases from the literature and added four of their own. In addition, they studied the amylase content of pleural fluid occurring in diseases other than acute pancreatitis. In 12 cases the mean pleural fluid amylase was only 81 Somogyi units compared with 158 Somogyi units for the mean amylase level in the serum; this is in marked contrast to the pancreatitis cases where the mean pleural fluid amylase was 14,334 Somogyi units and the mean serum amylase 367 Somogyi units. These findings emphasize the diagnostic value of high amylase values in pleural fluid, especially in the later phases of the disease where the transient elevation of serum amylase already may have returned to normal.

SUMMARY

The case of a 62-year-old obese white male mental hospital patient with cyanosis and coma is reviewed. The absence of gastrointestinal manifestations in the presence of coma, absent left carotid pulse, and elevated SGOT suggested myocardial or cerebral infarction as the most likely working diagnoses. The subsequent clinical course and laboratory data including normal electrocardiograms, absence of localizing neurological signs, the presence of a left pleural effusion and elevated serum amylase determinations indicated that more likely this was an acute, painless pancreatitis. Attention is again directed to the need to include acute, painless pancreatitis in the differential diagnosis of unexplained coma. □

A graduate of the University of Texas Southwestern Medical School, Thomas R. Treece, M.D., is now taking his second year residency at the University of Oklahoma School of Medicine.

Alan R. Bures, M.D., a graduate from the Indiana University School of Medicine, limits his practice to his specialty, Internal Medicine.

Doctor Bures is now Electrocardiographer at the United States Air Force EKG Repository at Brooks Air Force Base in Texas. He is a member of the Alpha Omega Alpha.

A graduate of Northwestern University School of Medicine, Mervin L. Clark, M.D., is now Associate Professor of the Department of Medicine at the University of Oklahoma Medical Center.

Doctor Clark's professional affiliations include the American Society for Pharmacology and Experimental Therapeutics, the Central Society for Clinical Research, the Southern Society for Clinical Investigation and the American College of Neuropsychopharmacology.

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800 N.E. 13th, Oklahoma City, Oklahoma

Tumors of the Skin*

JOHN M. KNOX, M.D.
ROBERT G. FREEMAN, M.D.

Basic indications for removing skin tumors are (1) malignancy, (2) potential malignancy and (3) desire for cosmetic improvement. Every tumor should be individually evaluated to ensure selection of an ideal method of treatment.

EDUCATIONAL PROGRAMS and newspaper publicity have made people increasingly cancer-conscious. Because skin malignancies receive a just share of attention, patients often ask physicians about having a skin tumor removed. Fortunately, most of these lesions are benign, but skin cancers are quite common here in the Southwest where people spend much time in the sun.

REMOVAL OF NEVI

The most prevalent of all skin tumors, the nevus, begins in childhood or adult life usually as a lentigo, progresses to a junction nevus, a compound nevus and finally an intradermal nevus. Older people have fewer nevi which suggests that at least some nevi spontaneously disappear.^{1, 2}

According to Stegmaier and Becker,² a young adult has an average of 40 nevi. Some physicians believe that all of these should be excised surgically but this approach does not

seem justified. It would be impractical to remove all nevi routinely; however, there are three basic indications for removal. The foremost reason is signs or symptoms suggesting malignancy. Next is the potentiality of the nevus for developing into a malignant melanoma. Last is the patient's desire to improve his appearance.

POSSIBLE MALIGNANCY

What are the signs and symptoms suggesting malignancy? A melanoma should be suspected when there is 1) increase of pigment in a mole, 2) radial extension or peripheral halo of pigmentation, 3) noticeable increase in size of a mole, 4) ulceration of a lesion, 5) hemorrhage or serous exudation from a mole or 6) local satellite nodules.³

Most malignant melanomas are believed to originate *de novo* with no pre-existing nevus.⁴ In 25 per cent of patients, melanomas develop from benign nevi usually during the period when the nevi manifest junctional activity.

Histopathologic examination of all removed nevi protects both patient and physician. Lesions incompletely removed and later identified as malignant melanomas almost certainly were malignant at the time of excision. The literature contains no proved examples of an inadequately removed, histologically benign nevus developing into a malignant melanoma.⁵ Nevi recurring after incomplete removal do not manifest junctional activity unless this activity was present when the lesion was excised.⁶

Physicians with a particular interest in nevi or special training in recognizing skin lesions can accurately diagnose malignant melanomas.⁷ To substantiate this statement,

*From the Departments of Dermatology and Pathology, Baylor University College of Medicine, Houston, Texas.

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records at Baylor for the past five years were reviewed. During this period, more than 3,000 benign nevi and 46 malignant melanomas were studied. The clinical diagnosis was accurate in 97 per cent of the cases. The only diagnostic error occurring with any frequency was the diagnosis of a benign tumor as a possible malignant melanoma. Such an error is certainly justified.⁸

POTENTIAL MALIGNANCY

When no signs suggest malignancy, how can the physician determine which nevi should be removed for prophylactic reasons? Such decisions are not always easily made. In general, lesions at sites of trauma, nevi of the nail beds and unusual or atypical nevi are considered for prophylactic removal. Nevi of the hands and feet are not believed as ominous as they once were,⁹ yet they still deserve special consideration. Pregnancy has been thought to have a deleterious effect on malignant melanomas; however, White and others¹⁰ did not find this true.

All nevi removed for prophylactic reasons probably should be excised. Flat or slightly elevated brown-to-black lesions are usually junctional nevi, and if removed, should be excised. Common, lightly pigmented elevated or papillomatous lesions presumably are benign nevi of the intradermal or compound variety. Such lesions can be removed safely with any method that provides a satisfactory cosmetic result.

COSMETIC IMPROVEMENT

What is the proper approach to clinically benign lesions the patient wants removed for cosmetic reasons? An inflexible policy should not be formulated. Instead the physician should choose the procedure leaving the least amount of scar. Among the factors to consider are 1) character of individual lesions, 2) their location and 3) convenience to the patient. This last-named factor includes cost, time and pain.

Papillomatous lesions or lesions on a pedicle can be removed simply with scissors by clipping the base flush with the skin. Elevated nodules can be shaved off with a scalpel. Bleeding is controlled with light electrodesiccation, Monsel's solution (ferric

subsulfate solution) or simple pressure. The latter usually provides the best cosmetic results. Projecting "flesh moles" can be totally or almost completely removed with a surgical curet. The excavated area then heals with remarkably little scarring.

For benign projecting nevi on the face, excision is rarely justified although carefully performed plastic surgery will provide good cosmetic results. After the removal of facial lesions, spot dermabrasion may be needed to minimize scarring for this procedure helps to blend the sites of removal.

For benign lesions on the trunk or extremities, the operator usually selects a simple and quick method to save the patient's time and money. Here the usual objective is to eliminate lesions that are unsightly because of size or number. Fortunately the cosmetic outcome matters less in these areas where cutaneous anatomic differences make it difficult to obtain an excellent result.

REMOVAL OF OTHER LESIONS

Seborrheic Keratoses

These tumors, frequently seen among older patients, are exophytic and do not penetrate deeply into the dermis. Therefore they can be removed quite simply with a surgical curet. Ethyl chloride freezing supplies adequate local anesthesia. Afterwards the lesion

John M. Knox, M.D., graduated from Baylor University College of Medicine where he is now Professor and Chairman of the Department of Dermatology. Doctor Knox is certified by the American Board of Dermatology.

He is a member of the American Academy of Dermatology, the Southern Medical Association, a member of the Board of Directors of the Society for Investigative Dermatology and the American Social Health Association.

Robert G. Freeman, M.D., graduated from Baylor University College of Medicine in 1949 where he is now Assistant Professor of Pathology and Dermatology. Doctor Freeman is a member of the American Society of Clinical Pathology, the College of American Pathologists and the Southern Medical Association.

should be curetted until all of the tumor is removed. Monsel's solution or simple pressure will provide hemostasis.

Dermatofibroma

Removal of this common benign tumor is optional. Removal requires excision because the tumor is located in the dermis. However, margins need be only minimal since it is benign and does not recur.

Hemangiomas

Lister and others¹¹ demonstrated that most hemangiomas, including the cavernous variety, spontaneously disappear. Routine small strawberry hemangiomas can be frozen lightly with solid CO₂ snow, irradiated or left alone. Irradiation of cavernous hemangiomas, when deemed advisable, should be done early in life because blood vessels become increasingly radioresistant after birth. To date no satisfactory treatment exists for the port-wine stain type of hemangioma, *nevus flammeus*.

Premalignant Actinic Keratoses

These lesions, previously called senile keratoses, result from chronic exposure to sunlight. They can be removed by surgical curettage followed by electrodesiccation, or if early and small, by freezing with CO₂ or liquid nitrogen. Also effective for early actinic keratoses is the weekly application of 20 per cent podophyllin in compound tincture of benzoin.

METHODS OF TREATING SKIN CANCERS

The treatment of skin cancers concerns family physicians, surgeons, dermatologists and radiologists. Irradiation, surgical excision and curettment followed by electrodesiccation are the commonly used therapeutic modalities.

While each method is effective, none is ideal for all skin tumors. Every lesion should be evaluated individually before selecting the procedure most likely to effect a cure. This evaluation is based on location, size, extent, rate of growth, evidence of metastasis and cell type of the cancer. Secondary factors include cosmetic results, expense, convenience and comfort to the patient.

Because the public has become increasingly cancer-conscious, most lesions are treated before they are large and difficult to eradi-

cate. The result is a remarkably high cure rate which could be even higher if more people sought early medical care and if physicians more carefully evaluated and treated each lesion.

The physician must not only be well trained in any technic he employs for the treatment of skin cancer, but he must also understand the nature and biologic behavior of tumors. His ability to estimate the likely behavior of a specific lesion may lead to more intensive treatment in aggressive cases, whereas his recognition of the relatively benign behavior of some lesions may prevent unnecessarily destructive procedures.

With large or invasive skin cancers, it is important to determine the exact extent of the lesion—its margins and its depth. Failure to delineate these factors properly undoubtedly accounts for many recurrences of skin cancers. This delineation is essential before surgical treatment since the margins of the wound remain untreated. Many physicians forget that a neoplasm may extend into the dermis or subcutis beyond the visible margin surface. This often results in inadequate treatment. Careful inspection and palpation, as well as histologic evaluation of margins by frozen sections, significantly diminish this possibility.

IRRADIATION

This is an effective method of treating 1) large basal and squamous cell carcinomas on the head and neck, 2) tumors in areas where surgical destruction of tissue is undesirable, such as the nose and 3) lesions on mucous membranes such as the lips and penis.

Irradiation benefits patients in poor health especially since it avoids the necessity of an anesthetic and eliminates the possibility of trauma that sometimes accompanies surgery. Another advantage is that it can be administered on an out-patient basis. The method does have some drawbacks. The need for many return visits, the occasional unsightly or unhealthy late radiation scar, the possibility of new malignancies and the difficulty of treating recurrences must all be considered.¹²

SURGICAL EXCISION

This is the most effective method of treating large, ill-defined lesions or those that ex-

tend into the underlying fascia, cartilage or bone. It also is preferred for large lesions on the trunk and extremities. areas which tolerate irradiation poorly.

When excision is selected for small lesions it is important to include a significant margin of normal skin^{13, 14} and to have suture lines follow the lines of cleavage or natural expression folds.¹⁵ Skin grafting may be needed for large lesions when closure is difficult or impossible. The Mohs chemosurgery technic^{16, 17} is useful for treating certain problem cases.

CURETTAGE AND ELECTRODESICCATION

Surgical curettage followed by electrodesiccation is a most effective means of treating the majority of small basal and squamous cell carcinomas. Even a large diameter does not always contraindicate its use. It quite easily destroys superficial lesions of substantial size, eliminating the need for skin grafting or other reconstructive procedures.

This technic has been criticized by those who are neither adequately informed of its effectiveness nor familiar with its proper execution. For most skin tumors, it has a remarkably high five-year cure rate, often exceeding 94 per cent.^{18, 19} In addition, it offers the advantages of simplicity, good cosmetic results and convenience to the patient. Diagnosis, biopsy and definitive treatment can be completed in one office visit.

SUMMARY

The three basic indications for removing a skin tumor are 1) manifestation of signs or symptoms suggesting malignancy, 2) potentiality of a nevus for developing into a malignant melanoma and 3) the patient's desire to improve his appearance.

For cancers of the skin, the most commonly used modalities are irradiation, surgical excision and curettment followed by electrodesiccation. While each method is effective, none is ideal for all skin tumors. Every lesion should be evaluated individually before selecting the procedure most likely to effect a cure. This evaluation is based on location, size, extent, rate of growth, evidence of metastasis and cell type of the cancer. Secondary factors include cosmetic results, expense, convenience and comfort to the patient. □

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Baylor University College of Medicine, Houston, Texas

CALL FOR SCIENTIFIC EXHIBITS

Limited space for scientific and institutional exhibits will be available in the headquarters hotel of the OSMA's 1964 Annual Meeting. The meeting is scheduled for the Skirvin Hotel, Oklahoma City, May 1-3, 1964.

Physicians interested in preparing exhibits for the meeting should first contact the OSMA Executive Office and obtain application forms. A committee of physicians will receive all applications and assign display booths according to the merit of the prospective exhibits and the availability of space.

Forms may be obtained from the OSMA, Box 18696, Oklahoma City.

Some "Teachable" Aspects of Interviewing*

CHESTER M. PIERCE, M.D.

This paper describes a current teaching method. The aim of the paper is to emphasize common interviewing problems and how they can be corrected.

MEDICAL STUDENTS and residents often feel uncertain regarding how to interview and how to evaluate their progress in interview technique. Psychiatry departments are being used with increasing frequency to achieve these ends. This paper describes the method used at the University of Oklahoma to emphasize a few "teachable lessons" in interview technique. These lessons are easily assimilated, and it is hoped that the general principles of this method are such that any physician may apply them in a way that he gains increasing confidence in his interview skills. Furthermore the same principles suggest to the interested researcher areas which could be quantified in order to learn more about interviewing practices.

However this essay will deal only with the method used to teach students at this medical center; the research devices will be considered in another paper. The student

interviewer examines a previously unknown patient from any service while he is observed by a small group of peers and an instructor. The observers may be behind a one-way mirror or they may be watching a monitor from a closed-circuit TV. Other acceptable variations include examining the patient in the same room as the group or having someone (such as the instructor) take the role of the patient.

All second year medical students are interviewers during their Behavioral Science Course. The interviewer conducts his examination before several peers and an instructor. The instructors are members of the staff or trainees in psychiatry, psychology or social work. It is the general opinion of both faculty and students that observing and participating in about ten interview sessions is particularly helpful as the students begin their clinical careers.

In addition, this method which involves active peer criticism has been used with success to help senior nursing students and graduate nurses learn the principles of inter-personal relationships. We believe that the use of good interview techniques is a basic requirement in getting nurses to be more valuable as co-therapists in individual and group situations (such as remotivation techniques).

A "game" is played in which definite ground rules are established. When the faculty designates the process as a game,

*From the Department of Psychiatry, University of Oklahoma Medical Center.

learning is enhanced and peer criticism, the basic ingredient of the technique, is more active. After a 15 minute interview each group member, in rotation, offers constructive criticism to the interviewer. The interviewer is allowed no refutation until everyone has "come to bat." Then the interviewer is permitted to have his say in way of rebuttal. The group discussion then focuses around the commentaries from the observers as well as from the notes made by the instructor. The ground rules dictate that the interviewer, however, has control of the last 15 minutes of the two hour session. It is he who has the last word in the session and who dismisses the group. At the next session, of course, the peer roles change and in this way everyone becomes both critic and interviewer. There is no limit to the number of sessions in which a group may play the game with profit.

The teaching sessions are augmented by introducing an authority in some of the non-medical behavioral sciences. Comments about the interview method, the subject matter of the interview or the teaching method itself which are made by an anthropologist, sociologist, psychologist, philosopher or communication analyst, greatly intensify the sensitivity of the medical student to the need to be holistic with each patient he sees.

In order to make a more lucid critique of the interview, the students are told they must consider these specific points: 1, the handling of the salutation by the doctor; 2, the ease of the examiner and the ease of the patient throughout the interview; 3, the use of the interview content and 4, the handling of the valediction. These points constitute the basic structure for criticism of the interview.

From this peer criticism there emerges material which can be taught to the student interviewer. Without considering any of the reasons why this game leads to definite sharpening of interview technique, it can be stated that the following four areas are those in which students can appreciate the value of these teaching sessions. The teaching sessions, using peer criticism, usually examine: 1, non-verbal communications; 2, the errors in maintaining the continuity of flow of the interview; 3, the delineation of

the critical moment of the interview and 4, how all interviews are both therapeutic and diagnostic. In order to be certain to cover something germane in all areas, it is useful for the instructor to take rather copious notes (of course he may also want to have a tape recording of the interview, especially if it can be procured without calling attention of the patient to the recording apparatus).

To best play the "game" the atmosphere of friendly rivalry must be fostered in a special way by the instructor. He must indicate fully to the group that the game can't be scored from week to week. That is, for instance, the information a man gets in one interview does not set a precedent for the next man. After indicating how and what it is that will be criticized, it is usually not difficult to get the group to see the need to consider an interview as an active, dynamic interaction in which the doctor must be thinking and concentrating with a singular devotion to purpose. The students can grasp the idea that to be effective in keeping all the interview correlated, one has to be active and sustained in his attention.

It is more difficult to get students to understand the need to let the patient talk. Naturally, there are many reasons why the interviewer may talk excessively. Over the course of several sessions a number of these reasons can be demonstrated to the group. As a corollary of not talking, it is necessary to point up the value and difficulty of listening to the patient. At the same instance it is necessary to assure students that in an interview one can obtain only a finite amount of information and one need not be upset if he hasn't procured large quantities of data from the patient. This provides an opportunity to show the student that rapport must be earned and that the doctor and patient, no matter how compatible, must grow in their mutual trust, confidence and respect for each other by means of interview contacts.

Once this emphasis is brought out there is a chance to give the others reassurance that is needed to make everyone participate in the game. Reassurance is necessary because the student interviewer feels guilty about using a patient whose cause

may not be advanced by the interview. Such guilt should be anticipated and diluted by indicating how such interviews can bring a benefit (even an indirect one such as general increased well being from the extra attention) to the patient. Here the instructor must emphasize that the student can't really harm a patient, *e.g.*, say something that in itself will precipitate a psychosis or heart attack. The next link in the student's chain of security is to state that in interviews, routinely, important material, if missed by the interviewer, will have a tendency to crop up again. Thus, if one stays alert he can pick up the points he has missed.

Since most students have strong basic desires to be helpful to patients there remains only to let the student know that he will have an opportunity to be therapeutic. This is done by indicating that the essence of the interview isn't so much in what he says to the patient, but how he says it. The student understands that the important aspect of the interview is how he gets things across to the patient and that much of this depends on how well he can emphasize yet remain objective.

Now the game is ready to be played. Following the interview the critics make their commentaries. After making their observations the group can grant a grade (in the case of medical students). Yet it is important that the group knows the instructor is the one who determines the grade. For a group of residents grading is unnecessary.

At the University of Oklahoma the interview game is introduced in a lecture for participating faculty as well as for the second year class by covering the material in this paper. Then the lecturer and a student role-play an interview. Next the entire class is asked to comment.

It was elected to introduce the interviewing segment of the course around the time the student first goes on the wards for his physical diagnosis course. The second year Behavioral Science teaching at this point has included four hours per week for twenty weeks, of which time half has

been devoted to clinical psychiatry and half to sessions by an anthropologist, sociologist and communications analyst.

The remainder of this paper will be devoted to the examination of the four areas in which teaching can be emphasized. Some of the common errors of interviewing can be pointed out. These common errors usually are such that the student can be made aware of them and correct them as he develops his interview techniques.

NON-VERBAL COMMUNICATIONS

This area of interviewing is both the easiest to become sensitive to and the most elusive to master. The student grasps the importance of the clenched fist and teeth as a patient denies that he has any trouble with his boss. The next job is to get the student to correlate non-verbal behavior with the spoken word that is occurring or which occurred before the specific non-verbal action. Hence the student learns that crossing of legs may be a diverting tactic to forestall probing a sensitive area. Or he may realize that while compliant words are spoken, the tone, inflection and facial attitudes may reflect a profound noncompliance.

At first critics dwell intensively on linguistics and posture. Later they begin to include in their observations such non-verbal areas as the use of space and seating arrangements to effectively locate players and the patient. The players will call a blind spot in the interviewer who may resort to a mannerism such as lighting a cigarette in order to regain composure after being "attacked" by the patient. Here the dynamics can be traced out — the interviewer is told that his handling of space (where he placed the patient) may have contributed to hostility on the part of the patient. This hostility was expressed non-verbally but was picked up by the interviewer. The interviewer now expresses a counter-hostility by providing himself with gratification (without the patient's permission or without a compensatory offer to the patient) as a means of self indulgence and an expression of his status with the patient. In this way despite the verbalization going on, there is an undercurrent of to-fro hostility between the patient and the doctor which

prevents honest communication of feelings and ideas.

The non-verbal expressions of hostility and sexuality are most easily seen by student interviewers. As time passes they begin to see more clearly the non-verbal expressions of status and dependency by both examiner and subject. When these non-verbal cues are integrated in meaning with the verbalized interview data, the student begins to feel he is developing special and useful skills.

At this juncture the instructor must reinforce the idea that interviewing is an active, energetic process. One way which appeals to medical students and which has value in promoting clinical acumen is to make it mandatory that the observers and interviewers make diagnostic speculations to themselves before the interview gets under way. Thus an emaciated stranger who comes into the interview coughing, should cause a multitude of medical diagnostic opinions which may help "set" the tone and direction of the interview. The person who has a congenital limb deformity can be presumed to have had a certain quality of life experiences. These are quickly comprehended by the student and may make the exploration of early childhood and family inter-relations more meaningful. What is demanded is that the student first make the observations, secondly that he make a differential diagnosis, thirdly that he consider what it means in terms of life experiences to have this particular trait. Hence it is necessary to tell the student, "Put yourself in this guy's boots, but don't wallow in them. Think and feel what it means to have lost an eye in an accident."

There is one precaution. Sometimes the student perceives too much. He knows, for instance, that hemoptysis might signify cancer, pneumonia, tuberculosis, bronchiectasis or cardiac disease. He may become impatient for the subject to verify his diagnostic opinion. Thus the interviewer may become too aggressive or leading in his questioning in order to substantiate the diagnostic impression. In such instances the instructor must point out the value of timing one's questions and the value of phrasing them properly. Thus the non-verbal observation

leads to a certain path of interviewing and also colors the type of interviewing.

After the players have learned to focus on non-verbal actions and correlations in the interview, they are able to appreciate the pitfalls in conducting the flow of the interview. In general one teaches that non-verbal material must be correlated with verbal statements. In general also one teaches that the conduct of the interview revolves about the economical usage of verbal probing by the doctor.

ERRORS IN MAINTAINING CONTINUITY OF FLOW

In some respects the greatest blocks to a productive interview by a student are his status conflicts. He is uncertain about his aims and what identity he has with the patient. This uncertainty reflects itself often in a curious way. The student tends to become too rigid, too professional and the interviews seem cold and detached as the interviewer takes care that he conducts the interview in a "professional" manner. It is therapeutic as well as instructive to many students (who are able to see this distance and aloofness in their peers and to question whether it is extant in their own technique) to encourage students to be natural and to be themselves. The student should aim at saying things as he would say them to a friend. He must not model his "style" after that of some other physicians or the stereotype of a physician. Usually the student should be disabused of the thought that

Chester M. Pierce, M.D., a 1952 graduate of Harvard Medical School, has been certified by the American Board of Psychiatry and Neurology. He is Chief of Psychiatry at the Veterans Administration Hospital and Associate Professor of the Department of Psychiatry, Neurology and Behavioral Science at the University of Oklahoma School of Medicine.

Doctor Pierce is a member of the executive council of the District Branch of the American Psychiatric Association and, in addition, holds memberships in the American Psychosomatic Society, the Society of Psychophysiology, and the American Association for the Advancement of Psychotherapy.

certain situations call for a studied, deliberate and adopted attitude. He should first feel warm and human toward his patient. Once this is done the status barriers disintegrate and the doctor is still professional in the situation without engendering gratuitous hostility (which of course is responded to by counter hostility).

By the time a student has entered clinical training, he is knowledgeable about such interview axioms as not to ask leading questions and to be selective about how far one "pushes" a patient about tender areas. These are not the common errors, therefore, which inhibit spontaneous verbalization of pertinent data by the patient. In fact, the continuity of flow is blocked most often by hostility, counter-hostility currents which pervade the interview, frequently secondary to status considerations. Thus it is necessary in the post-interview discussions to emphasize how certain avoidable errors lead to a hostility-counter hostility pattern.

For instance this hostility pattern may be subsequent to the interviewers' insistence to ask the "useless question." It can be shown to the student how chagrined a subject became when the doctor asked the question, "How many children do you have?", after the patient had stated four minutes previously, "I have two children, doctor, both are now married." Such a question by the doctor insults the patient who reacts by showing non-verbal displeasure in body posture, and volunteering just after answering the question, "Three young doctors missed my diagnosis; it took an older doctor to know what was wrong with me." Here begins the cycle in which the young doctor feels uneasy and he becomes a shade more aggressive in his next question. The observers can note that the question about "how many children" reflected at best a poor ability to keep data in mind and at worst an outright inattention to gross details of the interview. Since the subject is in the situation of properly expecting the doctor to be concerned about all details, he is hypersensitive that the young physician (like others who failed to understand him) does not know how to give

the needed personal attention to his case. In being economical in the interview situation, students must learn that each question should further their knowledge toward a goal and be couched in terms and manner that will be acceptable and if possible, therapeutic to the patient.

The failure to be economical in this manner results in other common correctible errors. Thus students may see which questions were "grabbing for straws" — thus unrelated, thus uneconomical. They can see which questions were poorly conceived so that the patient could not give an answer which would further the knowledge of the doctor. At times these questions are asked impulsively and rapidly. The flow of the interview becomes disjointed as the hapless patient attempts to give answers. His reaction, generally, will be to diminish his spontaneous production. Because of this passive aggressive maneuver the interviewer has to resort to a question and answer type of interview. He has lost the patient and responds with counter hostility. This promotes more of a breach in rapport.

Related to this type of questioning are other ill conceived questions. For example the doctor will ask a "multiple question." Here he demands in one breath to know in what town did the patient go to school, did he like his teacher, did he have many friends. Still another type of ill conceived question is the "half question." This is a subtlety. Here the doctor may say something like, "Did you?" in a place where the patient could respond that he did or didn't do one of several things such as go to school, like his teachers or have lots of friends at school.

Another large class of errors made by students are those which grow out of interrupting the patient. Here the subject may be talking earnestly about milk and the student leaps far ahead, out of both anxiousness and compulsivity, to ask about rocks. Not only has he been ruthless in his etiquette, but he has shifted the focus of the interview. All too often the shifting is unfortunate. Frequently it leads to the situation of the doctor shifting rapidly from one topic to another. Thus he dilutes his information and again runs the risk of bringing forth a hostile retaliation by the patient.

Therefore the student learns to be critical in the interview. In addition he begins to gauge the ramifications of the to-fro activities in himself and the patient relative to non-verbal behavior and the content flow of the interview process. Thus the interviewer begins to attune himself to many cyclic nuances as the to-fro activities vary from moment to moment. It is important also for the student to begin to attempt to capture the general cyclic motions of an interview. In the game the players are taught to be sensitive to the times when the interviewer is winning or losing the patient. Usually there can be seen a vital juncture when the doctor's conduct of the interview is more crucial than other moments in determining the overall outcome. It may be brought about by many factors such as a tactical error by the doctor (such as the how many children question) or it may be forced by an urgency from the patient ("Doctor, there is this thing I just got to say.") or it may be generated by a deliberate question or interpretation by the doctor ("Did you ever want to 'punch' your supervisor?").

Usually there will be consensus by the players as to what was the sensitive moment. However, usually it will be necessary for the instructor to sum up exactly what verbal and non-verbal exchanges led up to this moment and what happened subsequently. The teaching usefulness of this sort of discussion is appreciated by students since they can see the importance of the sustained, rigid, active work during the interview. The value of looking for the critical moment lies also in the fact that soon the student states he is able to watch his interviews climax and he can exert more definite attempts to control the results of the interview. Hence it is useful to review what led up to the critical impact and how it might have been modified or handled. The student then has a more critical sense of timing and begins to appreciate the wisdom of saving an interpretation, pursuing a topic, allowing a strategic withdrawal from a subject or estimating the need to slow down the tempo of the interview, etc.

At this point in the learning process the student can best understand that all interviews can be therapeutic and that any interview may be non-therapeutic. The reasons that the climax is handled well or poorly depend rather directly on the "therapy" which is applied. In the game technique even the biased, anti-psychiatric student will allow that certain things the doctor does or doesn't do at the critical moment affect the final outcome of the interview. Since what the doctor elects to do depends on his estimation of the total situation, the student learns that indeed all interviews are both diagnostic and therapeutic.

THE THERAPEUTIC-DIAGNOSTIC INTERVIEW

In this paper the therapeutic aspect of the interview is emphasized. The valuable teaching lesson here is for the student to see how certain maneuvers can be considered both simple and necessary. Here too, the game teaching method is a way of pointing out common, remediable errors which negate therapy.

Probably the most common student error is the failure to take command of the interview. This, of course, relates to the status confusion which the student brings to the interview. However, the student needs therapy himself to the extent of being reassured that in the interview he is master of the dominance-submission relationship despite any other status considerations such as age, sex, or social background. Sometimes the student will have the command taken away by the patient. For instance the patient might say, "You must be the same age as my son, how old are you, doctor?" If the student yields the information or yields it in a flustered or uneasy manner the overprotective, guiding mother may now have another son rather than a physician who is to help her. Thus instead of being in the traditional role of magic father, the student now is the helpless son. There are many ways that command is yielded or seized and the players customarily make certain that the interviewer keeps alert to the advantage of being the magic father. Inevitably when one is not in command (and one doesn't have to be bossy or aggressive

or pompous to be in command) the interview falters. It is therapeutic for the patient to begin having trust, confidence and respect in the doctor. Unconsciously, the patient usually needs to see the doctor as a magic, omnipotent, kindly father. Consciously, he must see his doctor as a generous, wise expert who can apply proper controls and give adequate assurance. These conscious and unconscious attitudes develop only if the doctor assumes and remains in command of the interview.

Another remediable error involves reluctance of the student to be supportive. He may hear a harrowing, gruesome tale of misfortune and then plod into a review of the systems in a sober manner, without so much as saying, "Yes, I can understand how terrible you must feel after all this hard luck." Students understand that they should be natural and say in such circumstances, without being maudlin, at least what they would say if their next door neighbor had recited such a story. In general there seems to be a reluctance to be genuinely sympathetic. It is as if such sympathy were an indication of weakness by the doctor. Incidentally, the reluctance to be supportive is one reason that the final quarter of the second year course is concerned with the behavioral aspects of the communicative process and supportive psycho-therapy. Most students seem relieved to learn that when done in a sincere (yet firm) manner, giving sympathy when indicated is very therapeutic.

Perhaps due to the times in which we live, it is necessary to caution beginners not to proceed in an interview and do a "wild analysis." They are told that it is permissible, for instance, and necessary to keep thinking what a certain symbolism might mean. Yet it is premature (and usually a violence to the patient) to make symbolic interpretations. Thus the lesson is that one thinks what something may mean and then applies the information in some manner other than the "wild analysis" of symbolism.

Oddly enough, it is usual that students fail to take into consideration all the emotional, psychosexual and family data which is given to them. Thus they must be advised

that the death of a 20-year-old sibling when the patient was 25, may be something he wants and needs to talk over. Here the therapeutic maneuver is to correlate emotional, psychosexual and family data so that one can, almost passively, direct the patient to explore his feelings about the death and the dead sibling. Over and over in group sessions it is necessary to keep the students focused on how the patient feels as well as how he thinks about life events and the interview itself.

The last of the "simple," but necessary, vehicles for applying therapy is the most difficult to do but the easiest to grasp in its significance. This is an active process and involves how one says things to patients. The secret is to couch the words in acceptable and understandable terms. The teachable aspects of this consideration involve semantic choice and value judgments.

As the game is played it becomes obvious to all that the doctor may lapse into technical words which may be difficult even for a highly educated person to understand, *e.g.*, "Have you ever had a bout of hematemesis?" This error is worked on diligently by all. However, other semantic errors involve a sort of thoughtless disregard for the patient. Thus the group often decides that if they were the patient, for instance, they would have been infuriated when the doctor used the word "interesting" to describe a facet of the patient's case. At other times a critical moment may revolve about a poor word choice. One student listened attentively while a man described admiration for a father who worked as a lay minister, besides doing his regular job. The student offended the subject when he asked, "How much time does your father spend on this *hobby* of preaching?" The critical moment hit with a monstrous impact and the interview devoluted steadily as the doctor-patient relationship became dominated by undercurrents of hostility-counter hostility.

Hence semantic choice relates directly to the all pervasive error of using negative value judgments about patients. The group must be told why it is that physicians are negative to patients, but they must be taught that to be better doctors they must try to free themselves of those feelings.

Here the instructor can demonstrate the value of applying didactic knowledge of societies and cultures which has been obtained in other parts of the course. The common error which renders therapy negative is the result often of not only making a negative value judgment, but then pushing forward and inserting it into the interview. Naturally, such a judgment is an unwanted, expensive and needless passenger on the vehicle of therapy. Value judgment conflicts are rooted in cultural differences. The doctor's middle class attitudes may be repulsed by a lower class casualness about an illegitimate pregnancy or an indifference about playing hooky from work. Once the doctor vents these feelings (by implication or explication of words and actions) the patient feels, usually correctly, that the doctor not only doesn't understand him, but dislikes him. Thus starts the hostility-counter hos-

tility cycle which is ruinous to the process of psychotherapy.

SUMMARY

Skillful interviewing can be taught by a group game technique in which peers act to bring constructive criticism to one another. This technique helps students to learn how to structure an interview and how to avoid some of the most common interview errors. The emphasis in this method is to demonstrate remediable, common errors which may occur in any medical interview. Specifically considered are the areas of non-verbal communication, the errors in maintaining the content flow of the interview, the impact of the critical moment of the interview and the application of psychotherapy in the interview.

800 N.E. 13th Street, Oklahoma City, Oklahoma

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Tetracycline Fluorescence in Bronchogenic Carcinoma and Chronic Pulmonary Diseases*

HILLI SEVELIUS, M.D.
GORDON JIMMERSON, B.S.
JOHN P. COLMORE, M.D.

Two reports have appeared in the literature during the last two years on the use of tetracycline fluorescence as a diagnostic procedure in patients with carcinoma of the stomach.^{1, 2} An attempt was made to use a modification of this technique as a diagnostic procedure in patients with bronchogenic carcinoma.

METHOD

Ten male subjects with proven bronchogenic carcinoma who had malignant cells by the Papanicolaou technique on smears of the sputum were given 250 mgm. of oxytetracycline q.i.d. orally for five days. On the seventh day, sputum specimens were collected and examined for fluorescence under ultraviolet light and by Papanicolaou technique as well. The results are listed in table 1 and it can be seen that eight of these ten failed to show fluorescence.

Ten male subjects with non-malignant chronic pulmonary disease were examined in the same fashion. Nine subjects were diagnosed as having emphysema with chronic bronchitis; the other had bronchiectasis with chronic bronchitis. In all ten subjects the

sputum specimens following five days of oxytetracycline administration were unequivocally negative.

Surgical specimens from three male subjects with primary bronchogenic carcinoma who received oxytetracycline for a five day period prior to surgery, were also examined for tetracycline fluorescence. Touch preparations were obtained of the resected specimens and examined under ultraviolet light. One showed clear yellow fluorescence; in the other two cases, no fluorescence was observed. In one of the patients (J.P., included in table 1) both sputum and touch preparations were negative for fluorescence.

COMMENTS

From these limited data we conclude that in some instances adenocarcinoma of the

Patient No.	Patient	Age	Sex	Sputum Cytology Class*	Tetracycline Fluorescence
1	G.S.	42	M	IV	Weak fluorescence
2	G.W.	52	M	IV	Negative
3**	H.V.	60	M	IV	Negative
4	E.A.	55	M	IV	Negative
5	G.M.	49	M	III-IV	Negative
6	J.P.	42	M	V	Negative
7	E.B.	72	M	V	Negative
8	A.E.	54	M	IV-V	Weak fluorescence
9	B.R.	51	M	V	Negative
10	H.W.	63	M	IV	Negative

TABLE I

*The cytology examinations were performed by the University of Oklahoma Medical Center School of Cytology with grading of the smears as Class I-V, Class III being suspicious for malignancy; Class IV strongly suspicious for malignancy; and Class V diagnostic of malignancy.

** This patient's pleural fluid was also negative for tetracycline fluorescence; Papanicolaou cytology on the pleural fluid was Class III.

*From the Experimental Therapeutics Unit of the Department of Medicine, University of Oklahoma School of Medicine and the Veterans Administration Hospital, Oklahoma City

lung is capable of picking up oxytetracycline and producing the typical yellow tetracycline fluorescence. We also conclude that contrary to the experience with gastric carcinoma, this technique has very limited application in the diagnosis of bronchogenic carcinoma.

It is our opinion that the explanation for the discrepancy in the experience with gastric versus bronchogenic carcinoma is probably on a mechanical basis. Exfoliated cells in gastric malignancy are collected after vigorously washing the lesion. In the case of bronchogenic carcinoma there is no way to abrade the lesion first. In collecting this series of ten patients with known bronchogenic carcinoma and with proven malignant cells in the sputum by the Papanicolaou technique, it was necessary to discard at least 20 patients with known bronchogenic carcinoma and non-diagnostic Papanicolaou smears. A possible metabolic difference be-

tween bronchogenic versus gastric carcinoma with respect to tetracycline metabolism is also suggested as an alternate explanation for this discrepancy.

This study was aided by a grant from Chas. Pfizer & Company, New York.

GENERIC AND TRADE NAME OF THE DRUG

Oxytetracycline with glucosamine — *Terramycin*.

Mr. Jimmerson was a Student Trainee of the Oklahoma Tuberculosis Association during the period of this study. □

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- 800 N.E. 13th Street, Oklahoma City, Oklahoma

ABSTRACTS

PROBLEMS OF ADOLESCENCE*

This article discusses some of the problems associated with adolescence. The wide variation in the timing of the growth spurt, the sharpness of the curve in the individual patient and the relative consistency of the sequence of development is emphasized by the author. These facts are important in evaluating growth problems in the adolescent. During this growth period there is an increased nutritional requirement. Especially important are requirements for protein, calcium, and vitamins. Nutrition during this period can be very poor because of irregular eating habits, starvation-fad-dieting and poor protein intake with high carbohydrate intake. Overweight adolescents are frequently in negative nitrogen balance and tend to develop epiphysitis especially of the upper femoral head.

Psychologically, this period involves adjustment to changing body appearances, group relationships and changing relationships to parents in the transition from dependence to independence.

In order to work effectively with adolescents, the physician must be interested in the patient as a person and be willing to listen as well as advise. Chronic or debilitating illness during this period can be a management problem because of the patient's inability to accept being different. Unnecessary limitations at this time may produce loss of prestige and acceptance and result in lifelong crippling.

ED'TOR'S NOTE: Adolescence can be a difficult period. Knowledge of the physical, physiological and psychological problems of adolescence is vital to therapy in this especially difficult and many times misunderstood age group.

*Certain Problems of Adolescence. Marilyn Porter, Southern Medical Journal 56: 161-166, Feb. 1963.

UNUSUAL EFFECTS OF QUINIDINE

The authors had previously found a protein anabolic effect based on urinary nitrogen retention in patients receiving quinidine. An impairment of carbohydrate metabolism in a majority of subjects receiving this drug was also found. This paper reports on metabolic balance studies in 11 patients receiving one to three grams of quinidine daily. Significant nitrogen retention occurred together with retention of potassium and phosphorous. Calcium balance did not change. Urinary and fecal sodium excretion increased as did fecal weight and nitrogen content. Glucose "utilization rate" decreased and the oral glucose tolerance was usually impaired. There was no evidence that this effect was mediated through adrenal or gonadal hormones. Studies in mice and rats did not lead to gains in body weight or organ size in tissues stimulated by androgens. It is pointed out that the action of quinidine resembles growth hormone in the retention of nitrogen, phosphorous, and potassium. The authors also note that quinidine is the first substance of entirely different structure to share anabolic properties with androgens. This opens the way to substances that might have anabolic properties without androgenic effects. These effects occur only in humans and were not demonstrable in rats and mice.

EDITORS NOTE:

The question can be asked whether nitrogen, phosphorous and potassium retention indicates true protein anabolism. It is also interesting to note another factor that can influence the glucose tolerance.

The Effect of Quinidine and Quinine on Nitrogen and Electrolyte Balance (Protein Anabolic Effect) and on Glucose Utilization.

R. Palmer Howard, H. Alan Ells and Robert H. Furman. Metabolism 12: 359, 1963.

Ventricular Gallop

JOHN D. KYRIACOPOULOS, M.D.*

Heart sounds which later came to be known as gallops were described as early as 1838. Nearly half a century later Bouillard gave them the name "bruit de galop."

It remained for Potain to define and classify these sounds and to set forth theories concerning their mechanism. The ventricular gallop is the pathological counterpart of the physiologic third heart sound, which is frequently heard in healthy children, adolescents and occasionally in adults. It is a low frequency sound whose intensity varies, occurring in the range of 0.12-0.20 sec. from the second sound. It is best heard at the apex in the decubitus position and is accompanied by a precordial bulge.

Potain felt that the ventricular gallop was due to vibrations set up in the ventricular myocardium, stretched to capacity by the sudden inrush of blood near the end of the rapid filling phase. Others however maintain that the sound is due to a temporary closure or tensing of the A-V valves due to a reflux of blood towards the atria and great veins. Simultaneous atrial and ventricular pressure measurements from the side in which the ventricular gallop is produced have shown that the ventricular pressure is lower than the atrial pressure at the time the ventricular gallop is generated, thus refuting the valvular theory.

Potain's idea of stretching of the ventricular wall to capacity is not a necessary requirement. It is difficult to accept that in normal persons with third heart sounds, or in patients with congestive heart failure with ventricular gallop, the ventricular wall

has reached the "limit of distensibility." The pressure volume characteristics of the great veins and ventricular wall should ultimately be considered. Thus more resilient veins and a swift ventricular expansion in healthy subjects and an increased venous pressure, coupled with poor ventricular wall tonicity in heart failure, play an important role in the production of the third heart sound and ventricular gallop.

Ventricular gallop should be anticipated when the ventricle is working against an increased load: Diastolic (shunts, high output states—valvular regurgitation) or systolic (ventricular hypertrophy—semilunar valve stenosis, hypertension) and in states due to diseases intrinsic to the myocardium (fibroelastosis, etc.).

The "pericardial knock" in constrictive pericarditis and tamponade is similar in nature. It is due to steep ventricular filling which comes to a sudden halt when pericardial resistance is increased. Ventricular gallop must be differentiated from the opening snap whose frequency is high, occurring from .04-0.12 sec. following the second sound and it is best heard along the left sternal border; and splitting of the second sound whose two components are of the same frequency, vary with respiration and are best heard at the base in the erect position.

There is no essential difference in quality, intensity, location and time relation or influence of posture, between third heart sounds and ventricular gallop. The only criterion, except that the frequency of the third sound decreases with aging, is the function of the heart. When the cardiac function is altered it is arbitrarily called ventricular gallop. □

*Instructor in Medicine, Department of Medicine, University of Oklahoma Medical Center, and the Medical Service, Veterans Administration Hospital, Oklahoma City, Oklahoma.

Dean's Message

On the editorial page of this issue of the *Journal*, Doctor Kelly M. West relates some of the background which led to the creation of a Department of Continuing Education at the University of Oklahoma Medical Center. As he points out, the continuing education of the physician is primarily a responsibility of the physician himself. However, organized elements of the profession can, as has been demonstrated already in Oklahoma, play an important role in sponsoring programs of postgraduate education. The creation of this new department represents an effort to mobilize the resources of the Medical Center more effectively in planning and carrying out postgraduate teaching functions. The activities of the new department will not be designed to replace but rather to supplement and assist the programs now being conducted by professional societies and other medical groups.

In proportion to the needs in this field, the manpower and economic resources of the Medical Center are relatively meager, but we have certain advantages which could allow us to assume leadership in the field of continuing medical education.

These assets include the excellent spirit of cooperation which prevails between the

profession and the school. The University Center for Continuing Education in Norman is probably the finest facility of its kind in the world and its resources will be available for certain functions relating to continuing medical education. A rather substantial program has been developed in the paramedical fields by the University's Extension Division, and the medical school Office of Postgraduate Education very successfully has organized certain activities relating to the continuing education of practicing physicians. The postgraduate programs of the Extension Division in the health-related fields will be operated in close cooperation with the medical school postgraduate programs under the new Department of Continuing Education.

We believe we can attract financial support from sources outside the state in the development of our programs in continuing education because there is interest among the foundations in new ideas and imaginative planning in this field. However, the principal factor in determining the rate of development and the effectiveness of these activities will be the interest and support of the practicing physicians in this undertaking, which attempts to improve medical care through bringing to the profession better opportunities for continuing education.

Mark R. Everett

O.U. MEDICAL CENTER BOND PROPOSAL PASSED BY WIDE MARGIN

Oklahoma voters turned out Tuesday, December 3rd, to approve the \$7 millions medical center bond issue by an overwhelming majority in the statewide special election.

Tagged as State Question 411, the bond issue drew solid backing from voters throughout the state. Included among the official on-record support were 39 county medical societies who endorsed the question prior to the election and worked toward its passage.

Complete returns from the state's 3,059 precincts showed 152,940 Oklahomans voting yes on the issue and 56,137 voting no, an almost three-to-one majority.

Passage of the bond proposal now authorizes the Oklahoma legislature to issue \$7 millions in bonds for constructing new buildings and other capital improvements at the University of Oklahoma Medical Center.

Extent of the improvements will depend on the amount of federal matching funds that will be available. Original goal of bond sponsors was a new 600-bed hospital. Before the election it had been estimated by the OSMA's special Fact Finding Committee that a maximum of \$9 millions in federal funds could be available, although the actual Federal grant would probably fall short of the maximum potential.

State Question 411 was submitted as a proposed constitutional amendment. It authorizes the legislature to create a \$7 millions indebtedness and provides means of retiring the bonds. Sponsors of the measure said the bond issue can be financed from the present cigaret tax without any new taxes.

It will now be up to the 1965 legislature to vitalize the bond issue

amendment and provide funds to retire the bonds. The amendment more specifically authorizes the legislature to use cigaret taxes not already committed to other obligations or allocations from any monies in the general revenue fund not otherwise obligated, committed or appropriated. The legislature is also authorized to levy any new tax, if necessary.

39 County Societies Support Issue

Thirty-nine Oklahoma county medical societies representing 69 counties had endorsed and supported State Question 411. Counties reported to have endorsed the proposal are: Adair County, Alfalfa County, Atoka County, Beaver County, Beckham County, Blaine County, Bryan County, Caddo County, Carter County, Cherokee County, Choctaw County, Cleveland County, Coal County, Comanche County, Cotton County, Craig County, Creek County, Custer County, Delaware County, Dewey County, Ellis County, Garfield County, Garvin County, Grady County, Grant County, Greer County, Harmon County, Harper County, Haskell County, Hughes County, Jackson County, Kay County, Kingfisher County, Kiowa County, Latimer County, LeFlore County, Lincoln County, Logan County, Love County, Major County, Marshall County, Mayes County, McClain County, McIntosh County, Muskogee County, Noble County, Nowata County, Okfuskee County, Oklahoma County, Okmulgee County, Osage County, Ottawa County, Pawnee County, Payne County, Pittsburg County, Pottawatomie County, Pushmataha County, Roger Mills County, Rogers County, Seminole County, Sequoyah

County, Stephens County, Tillman County, Tulsa County, Wagoner County, Washington County, Washita County, Woods County, and Woodward County.

Doctor Mark R. Everett, Dean of the University of Oklahoma Medical School, commended Oklahoma physicians for their support and hailed the bond issue victory as a big step forward in medical education for Oklahoma. □

Industrial Medicine Gets Big Boost In Tulsa County

Earlier this year the Tulsa County Medical Society, through its Industrial Medicine Committee, approved and placed into operation a consulting service for Industrial Medicine in the Tulsa County area.

The purposes of the program are as follows:

1. To advise management and employers concerning essentials of a sound occupational health program, and to assist in developing an adequate industrial health service of such scope as may be desired.
2. To establish and maintain a roster of members of the Tulsa County Society willing and available to furnish qualified occupational medicine services.
3. To provide a means whereby the Tulsa County Medical Society may cooperate with those community health programs which will benefit the industrial worker.
4. To interest more physicians in qualifying themselves in the essentials of industrial medicine, including the providing of opportunities to obtain postgraduate education in this field.
5. To create a body of information about health, hospital and medical facilities in Tulsa County which shall be of value in attracting business and industries to the area.
6. To cooperate with the Industrial Medicine Committee of the Oklahoma State Medical Association and the Council on Industrial Health

of the American Medical Association on projects of merit.

7. To promote a better understanding among the members of the Tulsa County Medical Society as to the meaning and scope of an industrial health program.

As the basic goals of the program are achieved, the Tulsa County Medical Society tentatively plans to expand the program to eventually include consulting services in the field of occupational health, vocational rehabilitation and employment of the handicapped, advisory services to the Oklahoma State Industrial Commission, legal problems in compensation cases, and creation of proposed legislation to strengthen industrial health and safety.

Tulsa County Medical Society's Committee on Industrial Medicine has prepared a brochure to illustrate the industrial medical facilities available in Tulsa County and to explain the various services available to management and employers.

The brochure has been sent to all industrial installations in the county and is being sent routinely to all prospective industry via the Industrial Department of the Tulsa Chamber of Commerce.

The committee is comprised of twelve members. They are: Dale E.

Newman, M.D., Chairman, Lawrence E. Thompson, Jr., M.D., Tom Hall Mitchell, M.D., Charles J. Lilly, M.D., Gerald E. Cronk, M.D., Roy A. Lawson, Jr., M.D., Robert G. Perryman, M.D., William E. Van Pelt, M.D., Emil M. Childers, M.D., Hugh Perry, M.D., Earl M. Lusk, M.D., and Wilkie D. Hoover, M.D. □

Student AMA Dinner Held

Slightly over 190 medical students and their wives turned out Friday evening, November 22nd, in Oklahoma City's Huckins Hotel, to hear Oklahoma humorist, Stewart Harral. Mr. Harral is Professor of Journalism and Director of Public Relations Studies, University of Oklahoma.

The occasion was the annual OSMA banquet for the Oklahoma University Chapter of the Student American Medical Association.

On hand to explain the purpose and functions of the OSMA was association president, Joe L. Duer, M.D., of Woodward. Also present at the event were several general officers of the association and members of the OSMA Board of Trustees.

Current president of the O.U. Chapter of the Student AMA is sophomore medical student, Jack Connally. □

Physicians Urged To Attend Conference On Mental Health

January 26th, 1964, has been designated by the OSMA's Committee on Mental health as the date to conduct the first statewide Conference on Mental Health.

The Conference will be held in Oklahoma City's Skirvin Hotel and will feature several nationally prominent speakers as well as a number of Oklahoma physicians who will take part in the program. According to the Mental Health Committee, the entire medical profession is invited to the meeting, with particular emphasis on county medical society officers, their mental health committee chairmen as well as auxiliary chairmen, trustees and general officers of the OSMA.

The tentative schedule calls for registration beginning at 9:00 a.m., the opening session at 10:00 a.m. and adjournment at 4:30 p.m.

Concentrated emphasis, the committee reports, is being levied on mental health by the administration in Washington, the Federal Congress, and in Oklahoma a mental health survey study has been launched by the State Health Department. "Because of strong governmental overtures toward mental health," OSMA committee chairman George H. Guthrey, M.D., said, "the purpose of the OSMA Conference on Mental Health is to thoroughly acquaint physicians with the growing problems in mental health; the extent of government intervention; the role physicians should assume; and ultimately, to establish guidelines for physicians to follow in dealing with the Oklahoma mental health survey, anticipated legislation, and other facets of the mental health picture."

Doctor Guthrey indicated the Conference program will be divided into an *Opening Session*, *Topical Section Meetings* and a *Closing Session*.

"All county medical society officers as well as general members are urged to make plans now to attend the January 26th meeting," the chairman said. □



"Booton, who the hell is handling our Public Relations?"

Courtesy TRUE The Man's Magazine

Prominent Speakers Selected For County Officers Conference

Three prominent speakers have been selected to appear on the January 25th program of the Conference of County Medical Society Officers. The second annual conference is sponsored by the OSMA's Council on Public Policy and will be held in Oklahoma City's Skirvin Hotel. Selected speakers include: William R. De Mougeot, Ph.D., of Denton, Texas; Mr. Aubrey D. Gates of Chicago, Illinois; and Mr. James W. Foristel of Washington, D.C.

Doctor De Mougeot is the director of debate and forensics at North Texas State University, Denton, Texas, and serves as a member of the AMA Speakers' Bureau. Recently Doctor De Mougeot prepared a debate kit on the subject of medical care for the aged in cooperation with the Texas State Medical Association. The kit has been circulated not only throughout Texas, but much of the nation as well.

Mr. Gates serves as the director of the AMA's Field Service Division and as a member of the AMA's task force on "Medicare." He served formerly as field director for the Council on Rural Health of the AMA.

Mr. Foristel is a Legislative Representative for the AMA and works under the jurisdiction of the Field Services Division. He has been a key representative in Washington while lobbying against the King-Anderson Bill and while working on other legislative measures which are of significance to the medical profession.

Major emphasis of the conference will be placed on acquainting county society officers with the current status of the King-Anderson Bill and the role their societies can perform through implementation of "Operation Hometown." Much of the conference, moreover, will be geared to acquaint county society officers with public relation programs which are sponsored through the OSMA. □

Sites Selected For Regional Postgraduate Courses

The OSMA's Council on Professional Education has selected eight sites in Oklahoma where the 1964 Regional Postgraduate Education Courses will be held.

While the exact dates have not yet been established, the meetings will be conducted during the months of January through April at the rate of two a month. The 1964 postgraduate courses will mark the fourth consecutive year for the decentralized program series.

Four subjects — concerned with principal organ systems — are each presented twice during the program series. The four subjects and their site locations are: "The Colon" in Altus and Enid; "The Central Nervous System" in Woodward and Texas Lodge; "The Heart" in Bartlesville and Lawton; and, "The Pancreas" in Ada and Miami.

Program timing and the selection of the eight decentralized meeting

sites are factors in keeping with the general purpose of the activity—to bring high quality scientific meetings to the doorstep of the practicing physician with a minimum infringement on office hours. All programs will begin at 4:30 p.m. with two hours of lecture, followed by dinner and another two-hour period of lecture and discussion. A registration fee of \$7.50 covers dinner and the scientific program.

R. R. Hannas, M.D., Chairman of the OSMA Council on Professional Education, and Irwin H. Brown, M.D., Chairman of the Department of Postgraduate Education, University of Oklahoma Medical Center, are in charge of overall program planning.

Assisting in the organization of speaking teams are the following O.U. faculty members: C. G. Gunn, M.D.—"The Central Nervous System"; Thomas N. Lynn, M.D.—"The Heart"; W. O. Smith, M.D.—"The Pancreas"; and Jack W. Welsh, M.D.—"The Colon." □

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Questionnaire Deadline For Membership Directory Extended

A questionnaire was mailed on November 7th to each of the approximate 1,950 OSMA members. Physicians were asked to complete and return the questionnaires to the OSMA headquarters before December 1st. To date, slightly over 1,500 cards have been returned.

Due to the delayed return of directory questionnaires to the OSMA executive office, the deadline date originally set for December 1 has been extended to January 1st, 1964.

Through use of the questionnaire, OSMA members are being asked for biographical information to be included in the 1964 Membership Directory of the association, which is scheduled for publication in January.

The new directory will have several innovations. For instance, it will be presented in a handier size, 5½" x 8½", and will include phy-

sicians' telephone numbers for the first time.

Besides name, address and telephone number, biographical information will be included, such as date of birth, school and year of graduation, and specialty designation. General practitioners may identify themselves with a "special interest." A separate roster will provide a breakdown of the OSMA membership by county of residence.

Directory publication will be financed by advertising and by sales of individual copies to other organizations and individuals. Each OSMA member will receive one free copy, and may order additional copies at one dollar each, which is the approximate cost of printing.

The accuracy of information printed in the directory will be established by the questionnaire and through verification by county society secretaries and OSMA records.

All OSMA members who have not completed and returned the questionnaire card are urged to do so by January 1st. □

Professional Liability Conference Canceled At Last Minute

The statewide OSMA Conference on Professional Liability, which was to have been held Sunday, November 24th in Oklahoma City's Skirvin Hotel, was canceled Saturday afternoon, November 23rd due to the death of President John F. Kennedy.

The decision to cancel was made by the home office of the St. Paul Fire and Marine Insurance Company and was reluctantly accepted by the OSMA since the professional liability carrier was furnishing most of the program speakers.

Officers of all county medical societies and general officers of the OSMA were invited and urged to consider the meeting a "Command Performance" by the host group, the OSMA Council on Insurance.

Advanced registration indicated nearly 100 per cent representation from all county medical societies.

Expert speakers from Oklahoma and elsewhere were scheduled to participate on the afternoon program, which had been designed as a forerunner of similar meetings at the county medical society level.

According to the Council Chairman, Dave B. Lhevine, M.D., "There is a growing need for improved education on the important subject of medical malpractice, and the conference program was designed to help the responsible leaders of organized medicine reverse the current trend toward unmeritorious claims.

"St. Paul Fire and Marine Insurance Company has indicated," the chairman said, "that they are hopeful of rescheduling the conference for a date in the near future."

Doctor Lhevine pointed out that the decision for scheduling another Conference would rest with the Council on Insurance. □

Report County Officers

All OSMA county medical societies are urged to report the names of their newly elected 1964 officers this month to the OSMA Executive Office.

The Bylaws of the OSMA require that all component societies shall elect new officers in November or December for service the succeeding year. The Bylaws, moreover, require that newly-elected Delegates and Alternates shall be certified to the OSMA on or before January 1st of each year.

On January 25th and 26th, 1964, the OSMA will sponsor a Conference of County Society Officers and a Conference on Mental Health, respectively. Both events will be held in Oklahoma City's Skirvin Hotel. Since the two meetings will be geared for county medical society officers, it is essential that newly elected officers' names be submitted during December to allow the executive office ample time to notify and encourage the medical leaders to attend the up-coming meetings in January, 1964. □

DEATHS

E. S. KILPATRICK, M.D.

1880-1963

Pioneer Oklahoma physician, E. S. Kilpatrick, M.D., died in Elk City October 30, 1963.

A native of Thrillkill, Mississippi, Doctor Kilpatrick graduated from Memphis Hospital Medical College in 1911. He began his private practice in Mangum, Oklahoma, moving to Elk City in 1918 where he continued in practice until his retirement.

Doctor Kilpatrick was active in many of Elk City's civic organizations. Interest in his profession was expressed in his activities in the Beckham County Medical Society which he served as president and his membership in the Southern Medical Association.

In 1953, the Oklahoma State Medical Association presented him with a Life Membership in appreciation of more than 50 years of devoted medical practice.

HANEY A. ANGUS, M.D.

1875-1963

Haney A. Angus, M.D., a pioneer Lawton physician and father of Howard Angus, M.D., and Donald A. Angus, M.D., also Lawton physicians, died November 20, 1963.

The 88-year-old doctor was born in Rochester, Minnesota in 1875 and graduated from the University of Iowa School of Medicine in 1903. He moved to Lawton in 1905 where he established his first medical practice.

Active in many facets of civic work, Doctor Angus was named "Most Useful Lawton Kiwanian" in 1934. He was tagged "The Typical Delegate to the Oklahoma City Clinical Society" in 1937. An Honorary-Life Membership and a Fifty-Year Pin were awarded Doctor Angus by the Oklahoma State Medical Association in appreciation for his loyalty to the profession.

BOOK REVIEWS

Rare Diseases and Debatable Subjects, Second Edition, 1947; Further Rare Diseases and Debatable Subjects, 1949; Fredrick Parkes Weber, London Staples Press, London, England, pp 236.

Although this started out as a review of the two books listed above, it is impossible to do this in the traditional sense without reference to the remarkable author. While visiting in the home of Dr. William B. Bean, University of Iowa School of Medicine, Iowa City, I had the opportunity to read some of Dr. Weber's correspondence with Dr. Bean. Because of a mutual interest in rare diseases and in vascular lesions of the skin, Weber and Bean began a long correspondence which began in the late 30's and continued until just before his death on June 3, 1963 in his hundredth year.

It is likely Weber's name is attached as an eponym to a larger number of disorders than is the name of any other physician. The best known are Osler-Rendu-Weber's hereditary hemorrhagic telangiectasis, Sturge-Weber disease (hemangiectatic nevus of the face and cerebral meninges) and Weber-Christian disease (relapsing febrile nodular nonsuppurative panniculitis). However, there were many others. These include the Weber-Klippel syndrome (hemangiectatic hypertrophy of the limbs), Vaquez-Osler-Weber disease (polycythemia vera with splenomegaly), Weber-Cockayne familial recurrent bullous eruption of the hands and feet, the auriculotemporal syndrome of Frey and nodular non-diabetic cutaneous xanthomatosis with hypercholesterolemia and atypical features. Weber's writings, beginning in 1890 with a paper "on abnormal foramina in the heart and its valves," are voluminous, numbering over 1,200 including 20 books. Many feel that the most remarkable of his books is "Aspects of Death and Correlated Aspects of Life." While he was certainly one of the world's leading connoisseurs of

medical esoterica, Weber was regarded as a clinician of distinction and an excellent general physician. In a tribute in the *Lancet* on the occasion of the establishment of a lectureship honoring his memory, it is stated: "You might think, because he was an expert on diseases which were rare and usually untreatable, that he was the kind of doctor more concerned with diseases than with patients. You would be wrong. He was beloved by his patients. He treated patients with grave courtesy and listened intently to everything they had to say. After consulting with a doctor, he always went back to the patient and said something kind and encouraging. He liked everybody and was interested in everything."

On the title page of *Rare Diseases and Debatable Subjects*, he wrote: "For the classification and understanding of rare diseases syndromes, a study of developmental dysplasias, hamartomata and naevi (in the broadest sense of the word naevus), as well as genetic factors—especially inborn metabolic and other functional errors and tendencies—should play a most important part." In the two books Weber discusses many disorders about which he had written during the previous 50 or so years. He was fascinated by hereditary disorders and unusual clinical manifestations such as changes in the finger nails, pigmentation of the mucus membranes, neurofibromatosis of the tongue and other manifestations of von Recklinghausen's disease, blue urine and diseases of the soft tissues. Some of the chapter headings in the two books gives some idea of his wide and varied interest in unusual disorders:

A Case of Juvenile Rheumatoid Arthritis with Sclerodactylia and Calcinosis; Combined Osseous and Dermal Dysplasias — Developmental Osteodermopathies; Amyoplasia Congenita; Haemangiectatic Hypertrophy of Limbs; Haemangiectatic Hemihypertrophy; Some Telangiect-

atic and Other Anomalous Vascular Groups, Especially Those of Dysplastic Origin, including those Probably Resulting from Non-genetic "Accidents" during Intra-uterine Development; and Palindromic Rheumatism.

In 1903, five years before Buerger's paper, he wrote on "arteritis obliterans" and remained an ardent student of this disease, as is illustrated by some 22 later papers on this subject.

Weber was widely known as a distinguished collector of coins and medallions. He was said to have a flair for finding rare objects, and at one time or another, had valuable collections of vases, coins, and metals, and other antique material. Much of his valuable collections were donated to the British Museum and various libraries throughout the world. Although he lost his hearing and vision in his later years, he continued to write faithfully, dictating his correspondence and manuscripts to his wife. To the end, Parkes Weber retained an unflagging interest in a great variety of things—medical, historical, artistic, and philosophical. Certainly these two books should serve as a stimulus to any medical student or physician interested in keen observation of disease.

Heilkunst und Kunstwerk: Probleme Zwischen Kunst Und Medizin Aus Arztlicher Sicht, H. W. Knipping and H. Kenter, Friedrich-Karl Schattauer-Verlag, Stuttgart, 1961, pp 152, \$8.00.

"Problems between art and medicine from the viewpoint of the physician," reads the sub-title of this small book. This lofty definition permits much latitude and longitude, and many corners to become lost in, which it seems is what the authors did with gusto. From defining "similarities between physician and artist" they advance to a discussion of the historical development of art in various cultures, thence to the representation of various physical defects in works of art, and to the employment of art

in therapeutic activities. There are over forty illustrations, all technically well reproduced. Why many of these illustrations were chosen for inclusion is not easy to discern.

It is equally difficult to follow the reasoning advanced by the authors, since unsupported statements abound. They believe that good times will be ahead for art and artists, since the population growth, as well as the survival, thanks to antibiotics, of sensitive and gifted people will create a greater pool from which potential artists will emerge.

The contents of this book, however, will not trouble many English-speaking readers. The style of German employed will make it undoubtedly one of the least-read books in the library. *Gunter R. Haase, M.D.*

Genetics For The Clinician, C. A. Clarke, F. A. Davis Company, Philadelphia, Pennsylvania, 1962, pp. 294, \$8.50.

Medical Genetics is not a specialty of medicine per se, but a systematic way of looking at disease processes. Most of the current textbooks of genetics, however, present the subject in such a way as to frighten off the clinician trying to discover enough methodology and background to appreciate, at a clinical level, the avalanche of new information in this field. This volume, in the words of the author, "was written with the sole object of trying to arouse in clinicians some curiosity about genetics."

The development of information breaks away from the traditional chronologic development of the subject by first considering the nature of the gene, then going on to consider chromosomes of man, population genetics, and then detailed discussions of the various clinical entities having a genetic component. As the necessity arises, genetic ratios and gene interactions are discussed. The concluding chapters on pharmacogenetics, ionizing radiation effects

Miscellaneous Advertisements

G.P. INTERESTED in general surgery, available for practice October 1, 1964. Graduate of University of Iowa School of Medicine. Medical service completed. Contact William E. Hall, M.D., 1022 Callanan Dr., St. Louis, Missouri.

DESIRE location in Ob-Gyn. Board eligible graduate of Wisconsin Medical School, age 34. Contact Russell F. Mading, M.D., 7267 Renda Street, Millington, Tennessee.

IDEAL opening for young doctor in well established medical clinic, sharing reception room and equipment with three other doctors. Wonderful location on North May Avenue, Oklahoma City. Contact Frank D. Thompson, 3115 N. Pennsylvania, Oklahoma City, JA 5-5700 or JA 4-9552.

WANTED G. P. or Internist to associate with our Medical Arts Group. Furnished office in modern building. No investment. Guaranteed income. Contact Edward D. Greenberger, M.D., Medical Arts Building, McAlister, Oklahoma.

LOCUM TENENS needed for two or three months, beginning February 15th. Would like to accept a call for mission service during this period and need a G.P. to look after my practice. Offer includes comfortable home and office, both rent-free, plus all net proceeds from the practice. Contact A. C. Hirshfield, 908 N.E. 50th, Oklahoma City 5, Oklahoma.

and hereditary clinics will be of more than usual interest to the clinician for their wealth of common sense statements in these controversial areas.

The format of this book is well organized with good illustrations, a complete glossary and index, and selected references at the end of each chapter which adds immeasurably to their usefulness. This is potentially a very valuable "textbook" for the clinician interested in understanding advances in genetics. □

SPLENDID opportunity to move right in. Complete office furnishings for sale, including treatment room equipment and reception room furniture, also secretary's desk, etc. and doctor's private office furniture. The office space is available if desired. Contact Key H, The Journal, Oklahoma State Medical Association, P.O. Box 18696, Oklahoma City, Oklahoma.

FOR SALE: 1 G.E. R-36 combination radiographic and fluoroscopic unit, 220-V. 60-C Y; 1 P.C. 2 cardiatron #7174; 1 W O 8457 Madrid suction pressure unit; and 1 589 Cameron S M B-25 burl walnut cauterodyne serial #420. Contact R. N. Holcombe, M.D., 534 North 13th Street, Muskogee, Oklahoma.

GENERAL PRACTICE group needs additional doctor interested in family practice. Office suite and minor surgical facilities available. Registered laboratory and x-ray technicians, full time business manager and office staff now in operation. New man will have no overhead except rent until his fees are being collected. We offer the luxuries of group practice with the unlimited opportunities of solo practice in a city of 100,000 with no arbitrary restrictions on hospital privileges. Clinic located in large residential area. Address inquiries to University Park Clinic, 4111 Call Field Road, Wichita Falls, Texas.

OPENING for general surgeon, internist or general practitioner. Contact James W. Loy, Administrator, The Chickasha Clinic, Chickasha, Oklahoma.

FOR SALE, 1961 red and white, Chevrolet super sports coupe, air conditioned, power steering, power brakes, bucket seats. Also, clinical camera with enlarger. Contact Mrs. Peter E. Russo, VI 3-4953.

OFFICE SPACE for rent, five-room suite, northwest area, Oklahoma City. Share reception room with established practitioner. Excellent opportunity for general practitioner, or specialist. Contact Elmer Ridgeway, Jr., M.D., 3601 North May. WI 3-3344.

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